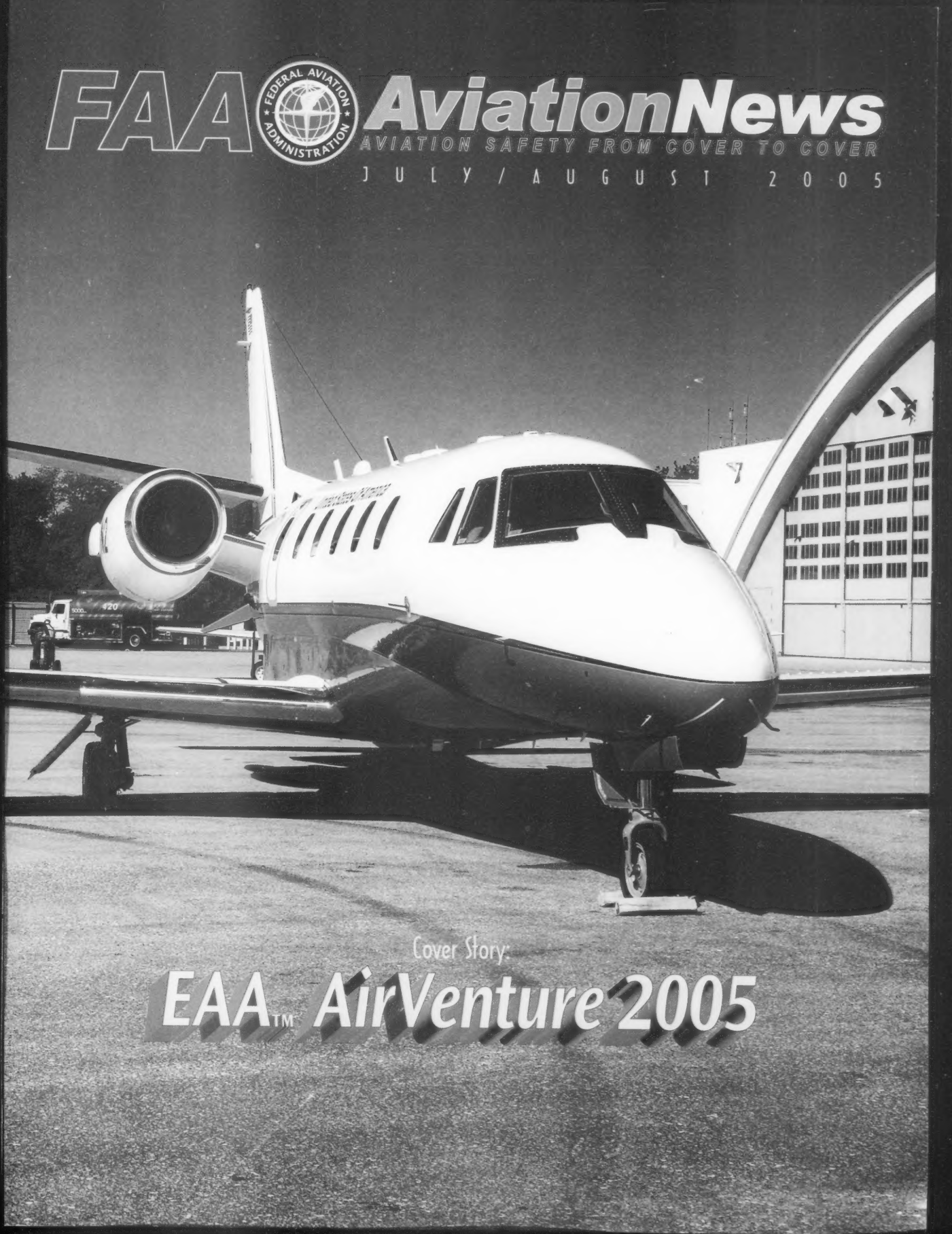
FAA AviationNews
AVIATION SAFETY FROM COVER TO COVER
JULY/AUGUST 2005



Cover Story:

EAA™ AirVenture 2005

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The FAA's Flight Standards Service, General Aviation and Commercial Division's Plans and Programs Branch (AFS-805) publishes *FAA Aviation News* six times each year in the interest of aviation safety. The magazine promotes safety by discussing current technical, regulatory, and procedural aspects affecting the safe operation and maintenance of aircraft. Although based on current FAA policy and rule interpretations, all material herein is advisory or informational in nature and should not be construed to have regulatory effect.

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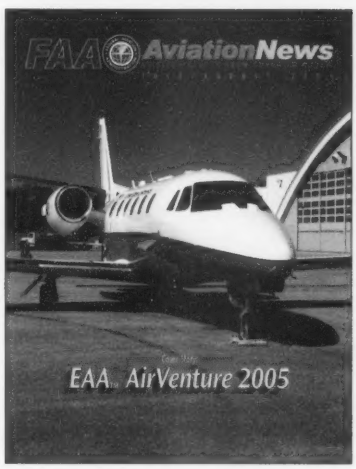


FRONT COVER: FAA's own gets a well deserved cover shot outside its hangar at DCA. (Mario Toscano photo)

BACK COVER: The Citation XLS *in flight. (photo courtesy of the manufacturer)*

EAA photos

COUNTDOWN TO AIRVENTURE 2005

The countdown to Experimental Aircraft Association's (EAA) AirVenture Oshkosh 2005 has begun. If you need any proof, the FAA published its special AirVenture air show procedures in its May 12, 2005, *Notices to Airmen* (NOTAM). The NOTAM provides information pilots need to fly to Oshkosh, Wisconsin, and nearby airports during AirVenture. When reviewing the NOTAM, please note the effective dates and times of the implementation of the special air traffic control (ATC) procedures. The times and dates are from 6 a.m. Central Daylight Time (CDT), July 23 to 6 a.m. CDT August 1, 2005. These NOTAM dates span the July 25 to 31 public dates for AirVenture.

GENERAL INFORMATION

Please note the information in the 2005 AirVenture Oshkosh NOTAM does not supersede any airspace restrictions contained in FDC NOTAMS. All pilots planning on flying their own aircraft to Oshkosh are reminded to check before departing for Oshkosh for the latest NOTAMS by calling Flight Service at 1-800-WX-BRIEF. If you stop en route or remain over night somewhere, you should check for any new NOTAMS.

If you are going to AirVenture, and you have not made your lodging and any other needed reservations by now, now is the time to do it. Then if you are planning on flying there yourself, you need to get a copy of the AirVenture 2005 NOTAM, become thoroughly familiar with it for your respective type of aircraft, and as the NOTAM states, "Pilots are expected to have a copy of this NOTAM available for in-flight reference." Note: this does not mean reading it for the first time while you are trailing 10 other aircraft to Fisk. (The NOTAM explains what Fisk is and how to get to it.) You can find and download the NOTAM on the Experimental Aircraft Association's (EAA) Internet web site (www.eaa.org or www.airventure.org), or from the FAA's Internet web site at (www.faa.gov/NTAP). You can also contact EAA at 1-800-564-6322 and ask for a free copy of the NOTAM booklet.

The EAA Internet web site contains a complete listing for local college dormitories, EAA campgrounds, and non-EAA private campgrounds.

INTERNATIONAL AIRCRAFT

If you are a foreign pilot planning on flying your aircraft to AirVenture, you need to review the latest flight information on entering the United States. Information is available on the Transportation Security Administration's (TSA) Internet web site as well as on the EAA AirVenture web site and the FAA's site. Certain Canadian and Mexican pilots who meet the requirements in NOTAM 2/5319, as revised, for VFR and IFR operations will not need a TSA waiver.

Canadian registered experimental

2005 AIRVENTURE OSHKOSH EAA

amateur-built aircraft and ultralight aircraft do not need a border waiver if they can comply with the terms of the current border crossing NOTAM and the FAA/Canadian Special Flight Authorization.

Caribbean Island registered aircraft must comply with the published FAA border crossing procedures.

TEMPORARY FLIGHT RESTRICTIONS

All pilots are encouraged to check NOTAM's for current temporary flight restrictions (TFR). Pilots can check both the FAA and EAA web site for TFR information.

FUEL

Because of the number of aircraft converging on the Oshkosh area, pilots need to plan to have enough fuel onboard for any potential delay at Wittman Regional Airport in Oshkosh or one of the outlying airfields in the surrounding area.

FLIGHT SERVICE INFORMATION AND HELPFUL HINTS

Pilots are asked to file their flight plans as far in advance as possible. Instrument flight plans (IFR) can be filed up to 22 hours in advance. Visual flight plans (VFR) have no advance time limit. Pilots can call 1-800-992-7433 24-hours a day to file.

A temporary Flight Service Station for walk-in service will be open in the FAA Safety Center from 0600 to 2000 hours CDT daily.

Pilots are asked to cancel their VFR flight plans while approaching destination airport since parking delays may exceed 45 minutes.

When inbound to the Oshkosh area airports, pilots are asked to add 30 minutes to their estimated time of arrival to provide a margin for unexpected delays because of the number of inbound aircraft to the area during this period.

Multiple legs or stops flight plans are not recommended. Pilots are asked to file separate flight plans for each leg or stop.

Air traffic control towers do not forward VFR arrival information to Flight Service. Pilots on VFR flight plans need to contact Flight Service directly to cancel their flight plans. When contacting Flight Service, pilots should provide their complete aircraft call sign, general location, and the frequency being used.

Because of the number of aircraft flying to and from the Oshkosh area, air filing of flight plans is not recommended between the hours of 0600 to 2100 hours CDT.

Pilots are asked to avoid using 122.25 and 122.5 MHz for weather information. Pilots near Green Bay should contact Green Bay Radio on 122.55 MHz. The frequency for the Milwaukee area is 122.4 MHz. The Madison area frequency is 122.6 MHz. The Wausau area frequency is 122.4 MHz. Flight Watch is available on 122.0 MHz.

LAKE REPORTING SERVICE INFORMATION

For pilots flying across Lake Michigan, the Green Bay and Lansing Automated Flight Service Stations (AFSS) provide flight following services across the lake that are separate from the normal VFR services. Although like normal VFR flight plans, the Lake Reporting Service (LRS) uses defined shoreline crossing points as well as specific radio reporting frequencies. The NOTAM and the *Aeronautical Information Manual* (AIM) paragraph 4-1-20-e, provide more details. Please note when using the Lake Report Service, since this is a separate VFR service, pilots have to open and close this plan separately from their VFR flight plans. Pilots must ensure that the appropriate AFSS understands which flight plan is being opened and closed. When operating on a LRS flight plan, radio contact must not exceed 10 minutes when within radio communication range or a specified reporting time. If radio contact is lost for more than 15 minutes, five minutes after a scheduled reporting time, search and rescue will be notified. A pilot can be on both a VFR and LRS flight plan at the same time.

AIRCRAFT ARRIVAL AND DEPARTURE PROCEDURES FOR OSHKOSH

The NOTAM provides detailed arrival and departure procedures for specific types of aircraft and ultralight vehicles flying to and from the Oshkosh area. Aircraft are broken down by speeds and performance. For most airplanes, the VFR arrival procedure from the city of Ripon, Wisconsin, to FISK intersection will be used. This procedure is for all VFR traffic with the exceptions of high performance turbojet and twin turboprop and warbirds capable of cruising at 130 knots or greater or no radio aircraft landing Oshkosh from July 23 through July 31. There are specific procedures for transient helicopters, ultralight and homebuilt rotorcraft, IFR traffic, and no-radio aircraft without electrical systems. The NOTAM contains instructions for use when the ceiling at Oshkosh is at or above 4,500 feet and the visibility is greater than five miles and when the ceiling and visibility is less than that listed. There is a special traffic management program in effect for Oshkosh during this period that requires IFR slot reservations. The NOTAM tells how to obtain a reservation and how to note it on the IFR flight plan.

IMPORTANT SAFETY NOTES

Because of the number and diversity of aircraft flying to and from Oshkosh during AirVenture 2005, pilots need to be aware of all types of aircraft being flown very slow to very fast within the greater Oshkosh area. The NOTAM recommends that pilots turn their aircraft lights on within 30 miles of Oshkosh and their transponders off within that distance. Pilots should be able to fly slower than normal cruise and faster than normal cruise in case they find themselves mixed in with different types of aircraft. The FAA has issued a waiver reducing the arrival and departure standards for category 1 and 2 aircraft. These are primarily single engine and light twin-engine aircraft.

The NOTAM's airport notes remind pilots that any aircraft movement off paved runways or taxiways is at the pilot's own risk. Since all aircraft must be tied down, pilots should bring their own tie-down gear.

Although pedestrians, bicycles, and motorcycles are forbidden on runways, taxiways, and the terminal ramp at all times, pilots should be alert for anyone who might be violating this prohibition.

No campfires or stoves are permitted near aircraft.

Pilots should periodically monitor 121.5 MHz en route to and from Oshkosh in case another aircraft has had an accident, and its emergency locator transmitter (ELT) is transmitting. If you hear a distress signal, note the time and your location and contact the nearest air traffic facility. Upon landing and taxiing to your parking spot, every pilot should check 121.5 MHz to make sure your own aircraft's ELT is not transmitting. If it is, turn your ELT off and notify Flight Service.

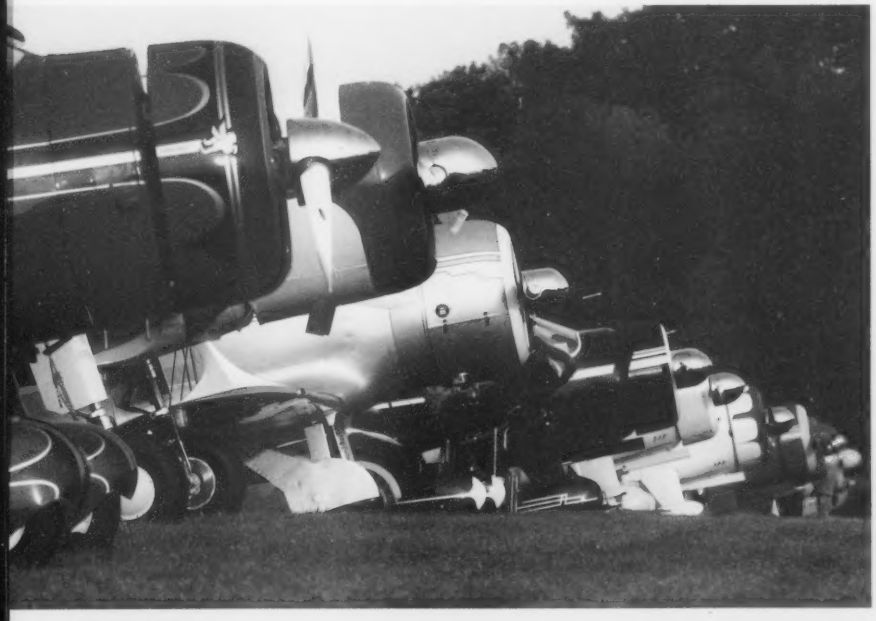
Student pilot training is not permitted at Oshkosh during the time of the NOTAM.

Pilots are reminded that air traffic is using dots on the runways to expedite landing. So, if you hear a controller asking you to land on the Blue or Pink dot, don't think the controller has spent too much time in the tower.

When taxiing, every pilot should keep alert for the EAA and FAA personnel working the runways and taxiways.

The NOTAM explains the window sign requirement for aircraft parking.

Finally, since this article only highlights some, but not all, of the NOTAM information published for AirVenture 2005, pilots need to review the complete NOTAM for their respective type of aircraft and landing airport. The single most important bit of safety advise for each pilot is to ensure your aircraft has enough fuel to go to the intended point of landing and have enough reserve to divert to a nearby alternate or to hold for a while. If you have a fuel emergency or other emergency, you need to notify air traffic control immediately.



2005 AIRVENTURE OSHKOSH EAA

FAA Aviation Safety Center

Forum Schedule

July 25-31, 2005

2005 AIRVENTURE OSHKOSH EAA

Time & Date	25 Monday	26 Tuesday	27 Wednesday	28 Thursday	29 Friday	30 Saturday	31 Sunday
0830	The Internet: An integral part of the AMT toolbox & pilot flight bag	Mountain flying	Why engines really quit: The top 10 reasons	Teachable moments: Tips for teaching risk management	VFR charting	Airport situation awareness	Prescription for an accident
Presenter	Ronald Matusiak	Lew Owens	Bruce Edsten	Susan Parson	John Moore	Doug Powers	Bruce Edsten
1000	Flight instructor professionalism in the 21st century	Surviving inadvertent IMC	Flying left seat, passing your next medical	Yoke & pedal — The art of flying your airplane	IFR charting	Maneuvering flight	Aircraft owner/ operator/ maintenance & aircraft records
Presenter	NAFI — Hill/Sachs	Eric Basile	Dr. Jon Jordan	Ron Machado	John Moore	Pat Shaub	Donald Brown
1130	Lessons learned from 20 years with NTSB	Ditching & water survival	"Meet the Administrator"	Radio techniques discipline for pilots & controllers	Single pilot IFR	Sport pilot flight instructor duties & responsibilities	Carburetor ice — How? Why? Where?
Presenter	Greg Feith	Robert Shafer		Dorothy Davis	Pat Shaub	Martin Weaver	Jim Stokes
1300	Human factors & spatial disorientation	More lessons learned from 20 years with NTSB	Aviation law & the pilot	Weather wise	Kings on risk management	GPS beyond Direct To	Pilot & maintenance causal factors
Presenter	Larry Boshers	Greg Feith	Michael McKinley	Pat Shaub	John & Martha King	Pat Shaub	Scott Landorf
1430	ATC at Oshkosh - "guys in the pink shirts"	Flying in Alaska	Fly companion charts/navigation	Cockpit resource management — Single pilot/Dual pilot	Flying with kids	Registration, certification, & management of light sport aircraft	
Presenter	Hough/Richards/Burzych	Kieran O'Farrell	Wade/Keiffer	Rogers Shaw	Philip Tartalone	Van Stumpner	

Breaking the Sound Barrier

Article provided by Kim Murray

photos by Mario Toscano

We all have moments in our lives when our perspective changes. Perhaps something happens to a friend or family member. Maybe we see something on the news. But if that moment is profound, the way we look at life changes immediately. Baltimore-based Southwest Airlines Captain Kim Murray had one such moment last year.

In February of 2004, she suffered a 90 percent hearing loss in her left ear. The experts call it Sudden Hearing Loss. What did it mean to her flying career? In the end, it meant very little. Pilots, over the course of their career, are subjected to high noise levels. This may result in gradual hearing loss in one or both ears over time. What happened to Murray was more startling from the perspective of being quite sudden. As she got back to work though, she realized that her perspective on life had indeed changed. She began to wonder if anyone was telling deaf kids what it's like to fly airplanes.

That thought paired up with a program that Southwest has called Adopt-a-Pilot. The program was launched in 1997 in conjunction with the U.S. Department of Education's "America Goes Back to School" effort. It is a four-week educational and mentorship program for fifth grade classes in which Southwest pilots are paired with local schools in those cities served by Southwest. Pilots can also operate under the "solo" program and select a school on their own. That is what Murray did. She contacted Kendall Demonstration Elementary School (KDES), which is located on the campus of Gallaudet University in Washington, D.C. Kendall is part of the Laurent Clerc National Deaf Education Center. The Clerc Center comprises two federally mandated demonstration schools for students who are deaf and hard of hearing and provides training and technical assistance to families, professionals, and programs; identifies, develops, evaluates, and disseminates innovative curricula and materials; and improves education for deaf and hard of hearing students throughout the United States in collaboration with schools and programs from around the country. When Murray contacted the school, she was put in touch with the 4th/5th grade team leader, Francisca Rangel, who was enthusiastic about the idea of Murray becoming the school's Adopted Pilot.

Murray began her visits with the "Kendall kids" in October of 2004. Different aviation topics were covered each month in an effort to give the

kids the "big picture" of what it's like to be an airline pilot. With the help of supplies sent by Southwest as part of the program, the kids utilized their science skills in demonstrating the "four forces of flight." To focus on geography, they used a map on the wall to track Kim's weekly flying around the Southwest system. The many post cards that Murray sent were used to enhance the city and state recognition for the kids from coast to coast. Murray also had a Boeing 737 cockpit poster and both VFR and IFR charts dry mounted to use in her presentations. After several visits, the pilot became the student. The kids conducted a class using aviation related phrases such as "Please fasten your seatbelt," and "Would you like some peanuts?" They showed Murray how to sign the sentences in American Sign Language (ASL). It was an invaluable glimpse into the students' world. The communication was flowing, but it seemed limited in some way. Murray decided to make the goal for her program to be getting the kids into an actual airplane.

This thought led her to her friend, Adrian Eichhorn, who is a pilot for the FAA based at Ronald Reagan Washington National Airport in Arlington Virginia. Would it be possible to get 20 kids into the FAA's hangar to see the aircraft? Eichhorn took the idea and starting working on it. While getting things arranged for the field trip, he found an FAA pamphlet titled "To Fly—An Initial Guide for Deaf Pilots and Their Instructors." The guide was co-sponsored by the International Deaf Pilots Association. Eichhorn called Murray and with their 45 years of combined flying knowledge, they realized neither one knew that deaf individuals could become licensed pilots. They quickly found that none of their other pilot friends knew that either. Murray used the pamphlet's information to e-mail the President of the International Deaf Pilots Association Clyde Smith and asked him if there were any licensed deaf pilots in the Washington DC area. He gave her the name of Eric Mansfield. Mansfield is a teacher at the Maryland School for the Deaf in Frederick, Maryland. When Murray asked Mansfield if he would join them in the proposed field trip, he was enthusiastic and agreed to come and give a presentation to the kids.

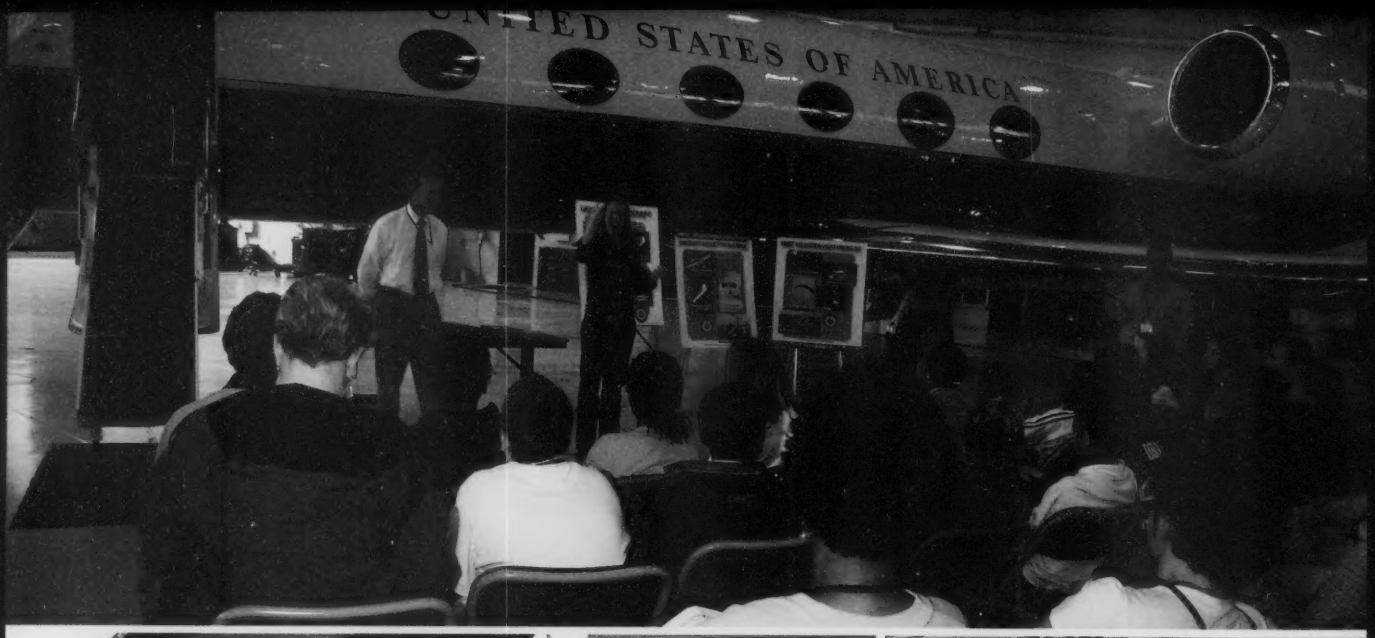
On the morning of May 9, 20 kids, their teachers, and three interpreters met Murray and Eichhorn at the FAA hangar. The FAA's Gulfstream *G-IV* and Cessna *Citation* were on display as well as one of the U.S. Department of Homeland Security's *Blackhawk* helicopters. Because of the flight restrictions for general aviation aircraft at the airport, the Virginia Wing of the Civil Air Patrol (CAP) provided a single-place glider that was towed to the hangar on a trailer. The CAP glider instructor, Steve Lander, allowed the kids to sit in the cockpit of an aircraft that they could actually fly someday.

Before the kids were divided into groups to tour the aircraft, Mansfield gave his presentation. Murray later thought that although she had told the kids that they could become pilots if they met the qualifications, when Mansfield started signing his presentation about becoming a pilot, the kids believed it. He was deaf and a pilot. Being a teacher and a pilot enabled him to circulate around all four aircraft and answer the kids' questions without the need of an interpreter or a "hearing" pilot. The kids bonded with him instantly.

The May 9 event at FAA's Hangar 6 allowed students to actually see several aircraft up close, but first they were greeted by FAA pilot Adrian Eichhorn and Southwest Airlines Captain Kim Murray (above). Rachel Rose, who is with the Gallaudet Interpreting Service, acted as interpreter

The kids were able to sit in the cockpit of all four aircraft. Things they had learned from the Adopt-a-Pilot classes were brought to life. They sat up front in the Captain's seat of the *G-IV*. They manipulated the controls. They sat in the passenger area. They climbed into the cargo hold of the Cessna *Citation* and discussed weight and balance. They strapped into the *Blackhawk's* pilots' seats. They asked the helicopter pilots about the huge rotor blades on the helicopter. But the glider was perhaps the biggest hit. Each child sat in it with the canopy down. The glider was an aircraft without an engine. It was something they could possibly fly.

The kids ran out of time before their questions did. They had an invaluable exposure to the world of flying. They walked back to the bus knowing that they too could become pilots.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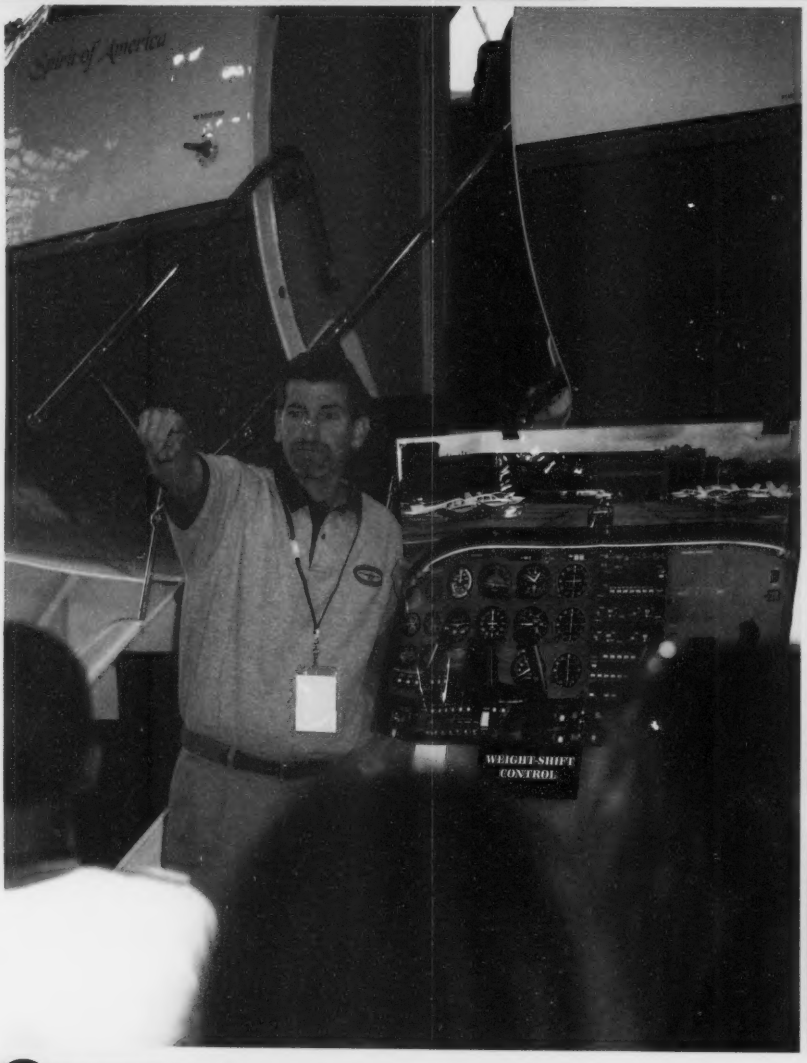
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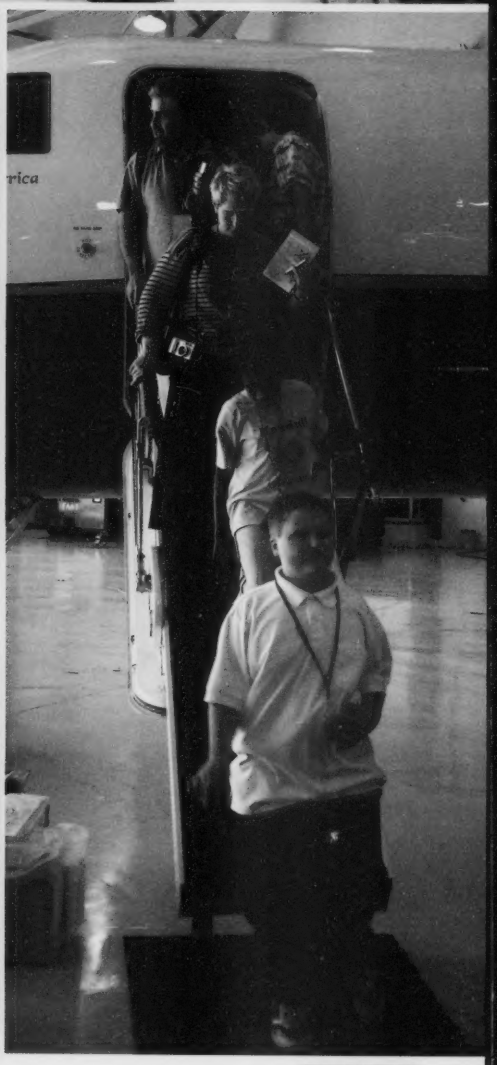
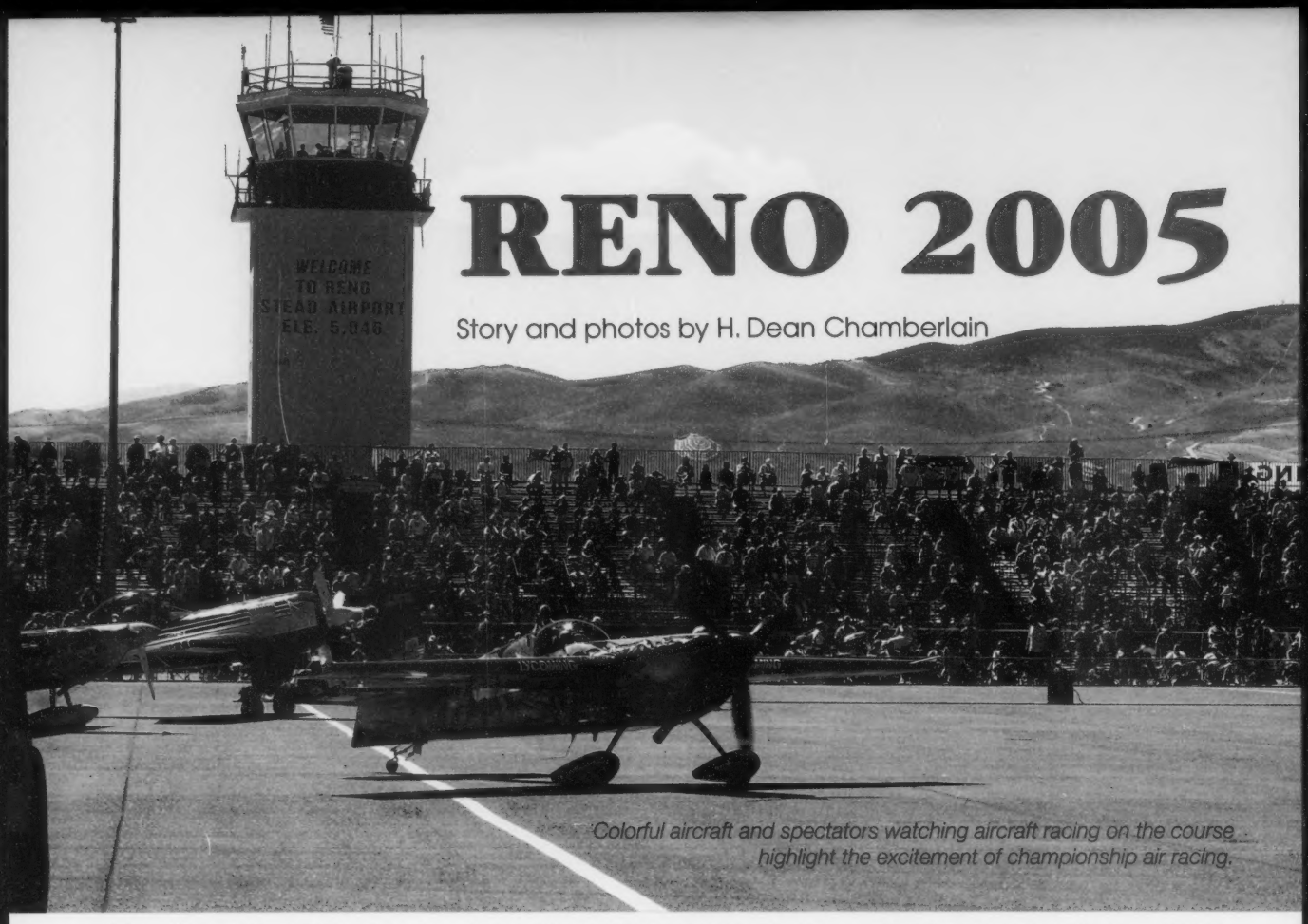


Pilots Adrian Eichhorn (top left) and Eric Mansfield (far left) fielded aviation questions from the students, but it was Mansfield who enthralled the students when they realized that he was deaf and a pilot. The CAP glider (bottom right) was the biggest hit of all the aircraft, because this was the one they could actually fly one day.

The Deaf Pilots Association is hosting its first aviation camp for deaf kids at AirVenture 2005 this summer at Oshkosh. For more information about learning how to fly with a hearing impairment, you can go to www.deafpilots.com for the Deaf Pilots Association or contact your local FAA Flight Standards District Office. For more information about the "Adopt-a-Pilot" program at KDES, you can visit http://clerccenter.gallaudet.edu/Clearinghouse/Happenings/pilot4-15.html.



RENO 2005

Story and photos by H. Dean Chamberlain

Colorful aircraft and spectators watching aircraft racing on the course highlight the excitement of championship air racing.

Although its official name is the National Championship Air Races and Air Show, for most people, it is better known as simply the "Reno Air Races." But even that is somewhat of a misnomer. If you need an interesting trivia question, the races are in fact held at the Reno Stead Field located about 15 miles north of Reno. For someone not familiar with air racing, I think the races can be summed up by repeating the wording on a cockpit placard I saw one year in one of the competing aircraft that simply read, "Turn Left, Go Fast, Don't Do Anything Dumb."

For those who have never been to an air race, Reno is air racing. It is fast aircraft, loud engines, and pilots and crews working hard to beat their competition. But it is a competition that is based on the safety of all. For unlike their automotive counterparts, air race pilots normally don't walk away from midfield pileups. That is why safety at Reno Stead Field is paramount. It is also why pilots are invited to race at Reno, and they have to prove their flight skills before being allowed to compete. It has been that way for the past 41 years. It is that way this 42nd year.

This year's race schedule will feature six classes of aircraft that will compete from September 14 through 18. Qualification dates are September 11-13. Like all aviation events, races are subject to wind and weather conditions.

In addition to hosting the world's fastest motor sport, championship air racing, Reno has something for everyone. From professional air show performers to military flight exhibition teams to a not so quiet jet car, Reno has it on the schedule. The following list of performers, with the appropriate caveat that the air show schedule is always subject to change, have agreed to attend as of the time this article was written. From Kent Pietsch's Interstate S-1 *Cadet*'s slow motion, aerial-ballet performed with parts falling off the aircraft to Scott Hammack's U.S. Air Force Reserve "Above and Beyond" jet-powered car roaring down the runway, Reno can thrill and entertain you with some of the biggest names in the air show and air-racing world. Then if you get tired of racing, you still have Reno. Some of the biggest names in the entertainment world perform in the casinos and hotels in the city.

The Canadian Air Force's "Snowbirds" will be at Reno this year for the first time since 1996. The Snowbirds will perform everyday from Thursday through Sunday. The U.S. Air Force "Thunderbirds" will also be at Reno. The Thunderbirds will fly each day from Thursday through Saturday.

According to the non-profit Reno Air Racing Association Inc. (RARA), the parent organization for the races, the expected six classes of aircraft for this year's races are:

1. Biplanes racing will be on the 3.11-mile course with speeds up to 200 miles per hour (MPH).

2. Formula One aircraft racing will also compete on the 3.11-mile course. These aircraft can almost reach 250 MPH.

3. Sport class aircraft are high-performance, commercial kit-built planes capable of reaching more than 400 MPH on the 6.39-mile course.

4. AT-6 "stock" T-6 *Texan, Harvard,* or SNJ aircraft are former military trainers that can hit speeds of more than 200 MPH on the 4.99-mile course.

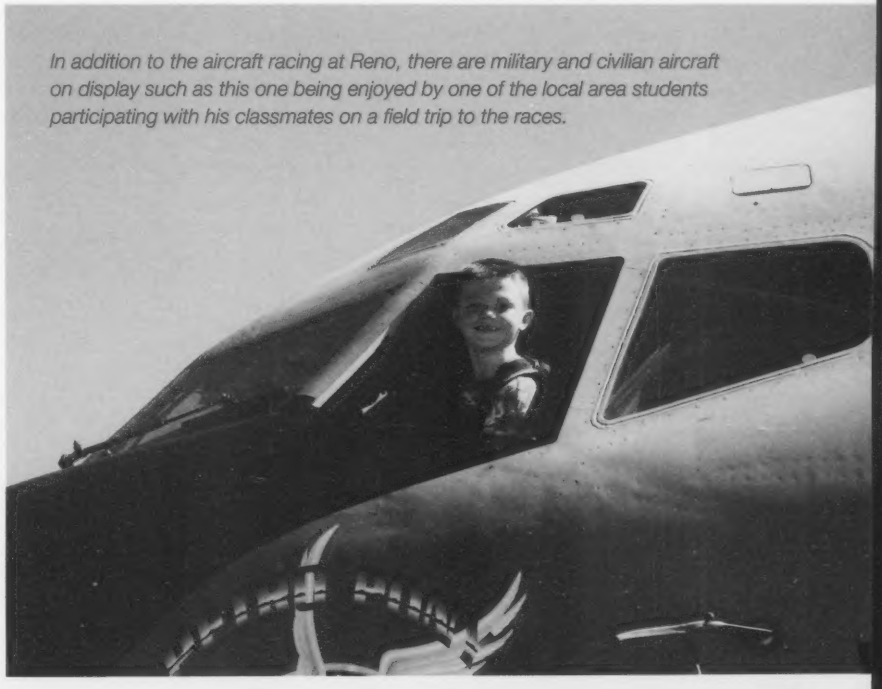
5. The Jet class, featuring L-39 *Albatros* jets, will be competing on the 8.355-mile course.

6. Unlimited class is open to any piston-driven aircraft. The Unlimited class planes are your favorite WWII type fighter aircraft flying the 8.355-mile course.

If you have not been to Reno, there is nothing like walking past the pit area early on a see-your-breath-cold September morning with a hot cup of coffee in your hand as the crews start bringing the smaller aircraft out for another day of racing. Normally the first race starts about 8 a.m. each morning. What is so great about the first races is that they are what I call family races. Although everyone loves to see and hear the Unlimited class aircraft fly, the early morning classes such as the Biplanes and Formula One aircraft are within a family's flying budget. When you walk through the RARA hangar where the Biplanes and Formula One aircraft are stored wing tip to wing tip, you can see moms and dads with their children and family friends working on or getting the family racer ready for the day's schedule.

These types of airplanes make racing available for many who could not afford a competitive Unlimited WWII fighter with all of the support such an aircraft needs. In the case of a Biplane class aircraft such as a *Pitts*, it may be one owner/pilot with a toolbox working on the aircraft in a hangar full of similar type aircraft. All surrounded by friends and families work-

In addition to the oversight provided by Reno Flight Standards District Office at the races, the FAA's Flight Service provided "mobile" weather service by setting up operations in this trailer to serve pilots who flew in for the races.



In addition to the aircraft racing at Reno, there are military and civilian aircraft on display such as this one being enjoyed by one of the local area students participating with his classmates on a field trip to the races.

Fire, crash, rescue personnel with their emergency response vehicles stand by in case of an accident or incident.

ing on their very colorful and personalized aircraft. Now compare this with one of the Unlimited category aircraft teams with its own, color-coordinated, specially equipped tractor-trailer workshop on wheels with a crew of skilled mechanics dressed in their matching crew outfits standing by to fix any problem from a blown tire to a blown engine to simply wiping the morning dew off the aircraft.

Such is a morning at Reno.

There is something magical in the air as the first rays of the morning sun flash across the cold desert sand as aircraft engines cough awake one by one and then call out to each other when ready to race. Just as interesting is watching the campers and early morning spectators searching for their first cup of coffee and breakfast. If the smaller Biplane and Formula One class aircraft are your family planes, then the big Unlimited aircraft are the masters of their airborne domain during race week. It is amazing what thousands of unleashed piston horsepower sounds like as the big engines roar to life. If you stop to listen, you can hear their sounds reverberating off the closed metal doors of nearby hangars on a crystal clear Nevada morning. Such is race week at Reno.

A key element each year at Reno is the close working relationship between the air show organizers, participants, sponsors, and the FAA's team of safety inspectors and support staff from the Reno Flight Standards District Office. The FAA's inspector in charge for the races is long-time Reno aviation expert and FAA employee, Clarence Bohartz.

Although Bohartz denies it, I think he knows everyone involved in air racing and especially those competing at Reno and supporting the races. Bill Eck, NARA's Director of Operations, says, "we have an agreement that what I know, Clarence knows, from the largest to the smallest of issues, nothing is held back...He is never too busy to listen, and, since I sign the waiver and am responsible for the sixty or so thousand people at the event, it's the only way it can work."

Although the RARA race officials are responsible for all of the activities involving the races, including the airspace surrounding the area during the races, the FAA plays an important role both in issuing the necessary FAA waiver needed for the races as well as in monitoring the race activities for compliance with the waiver. Those tasks are basically a year-round effort because the planning involves so many people and events. For example, RARA holds an annual Pylon Racing Seminar (PRS) each summer for would-be competitors. The seminar includes ground school instruction, formation flying training, and race-course practice. Anyone who has not raced at Reno within the past three years must complete the seminar. Pilots moving within classes must also attend the training to earn their racing credentials for the racing class in which they want to complete. This year's PRS was held from June 16-19. Reno FSDO inspectors were on scene to ensure compliance with the regulations.

The FAA waiver issued by the Reno FSDO provides a means for RARA and the racing and air show pilots to deviate from certain FAA regulations such as speed restrictions and minimum altitudes without jeopardizing safety. According to Bohartz, such items as checking pilot and medical certificates, flight review dates, and aircraft registration and airworthiness document checks are some of the areas the FAA checks at both the PRS and during the actual races. In addition, the waiver protects the spectators by establishing such requirements as crowd control and show lines, and no propeller turn lines. The crowd control and show lines protect people by providing a safe area around the race courses and air show areas in case of an accident or incident. The no propeller turn lines along with crash/fire and rescue plans, and fueling/fire safety are a few of the areas addressed in the waiver to help protect both spectators and participants.

In addition, air show and race participants attend daily safety briefings and debriefings attended by FAA safety inspectors. Other FAA professionals provide such support as the daily weather briefings and related support. Pilot training and safety issues include emergency planning, forced landings off the runways, crashes, and related safety planning. In a major aviation event such as Reno, safety is critical to the success of not only this year's event, but the long-term future of Reno as the premier racing site. Everyone from RARA, the participants, and the FAA work together to promote the highest level of safety before, during, and after race week because as soon as the last race's winner is announced, planning starts for the following year's race. So, mark your calendars for the 43rd annual National Championship Air Races and Air Show scheduled for September 13-17, 2006.

For more information, readers can check the RARA's Internet web site at www.airrace.org. ✢

Thunderstorms/Pilots/AFSS and ATC

by Michael Lenz

H. Dean Chamberlain photo

An airborne encounter with a thunderstorm can result in a badly shaken pilot at best or a damaged aircraft or fatal accident at worst. Most of us know better than to fly blindly into convective weather, and we successfully avoid such encounters, but enough accidents bear witness to the fact that some pilots do manage to get themselves into trouble. In the majority of those cases, the facts show that the pilot inadvertently penetrated an area of severe convective weather. We might ask ourselves, why a pilot would fly into a thunderstorm? Why didn't the pilot know there was a thunderstorm there? Why indeed?

Thunderstorm accidents are dramatic, and they invariably depict a very interesting chain of events.

The following account from an Aviation Safety Reporting System (ASRS) report by a Mooney M-020 pilot provides one clue and relates to encountering some nasty towering cumulus clouds.

"I had received permission to deviate to the SSW from Daytona Beach Approach and the controller handed me off to Orlando Approach. Orlando directed me to intercept V-3, when able. I was unable to find a pathway between the towering clouds. The controller said he needed me to take up a heading to the airway, and, although I explained that I was deviating to avoid the buildups, he said I was flying IFR and he needed me to take up a heading to the airway. The ride was so rough I was forced to deviate from the heading to return to calmer air. The controller said that I could not continue to deviate without first asking for permission and that he needed me on the airway because there were jets that needed to descend to my altitude. The controller instructed me to climb to 8,000 feet and there was so much turbulence that I could hold my altitude only within about 500 feet due to rather violent up and downdrafts. This wild ride had lasted for about six minutes when I reached the airway."

A second clue might be found in a second encounter with convective weather that resulted in a fatal accident. In this case, the same transmission from air traffic control (ATC) may have had two very different meanings to the pilot and the controller. The pilot, while deviating around a storm, was told to proceed direct to his next flight plan waypoint "when able." To the controller, this meant that after deviating, you should proceed direct. To the pilot, who had been receiving ATC help in getting around storms from the last ATC facility, this may have meant "You're clear of the weather, now you can go direct." This accident involved three fatalities.

Another accident points out the difficulty in making a visual assessment of severe weather. Here the pilot's view out the window must have differed greatly from what the approach controller knew was there. The pilot was offered a vector for weather deviation, but declined, saying the route ahead looked to be VFR. There was a subsequent exchange between the pilot and controller indicating that weather deviations would be approved and that each would be keeping the other advised. During this time, airliners were deviating around weather in this area. The pilot flew into a strong cell, which resulted in another fatal accident.

We can't over emphasize how important understanding is between ATC and pilots concerning convective weather. For starters, tell the controller what services you want. Let the controller know if you have no weather detection equipment on board. Be certain there is an understanding regarding the information and services you need and your limitations and capabilities. It may be vital to restate this as you are handed-off from controller to controller. The price of a misunderstanding here can be fatal.

Some controllers are willing to help and can provide excellent information and guidance to stay clear of storms. Others may not be as skillful and experienced at it.

The *Aeronautical Information*

Manual (AIM 7-1-15) offers in part:

• It should be remembered that the controller's primary function is to provide safe separation between aircraft. Any additional service, such as weather avoidance assistance, can only be provided to the extent that it does not derogate the primary function. It's also worth noting that the separation workload is generally greater than normal when weather disrupts the usual flow of traffic.

• To a large degree, the assistance that might be rendered by ATC will depend upon the weather information available to controllers. Due to the extremely transitory nature of severe weather situations, the controller's weather information may be of only limited value if based on weather observed on radar only.

• The AIM goes on to point out that deviations may be more readily accommodated in en route areas than terminal areas.

Last from the AIM:

• When weather conditions encountered are so severe that an immediate deviation is determined to be necessary and time will not permit approval by ATC, the pilot's emergency authority may be exercised.

This is a safety of flight issue. Do not hesitate to ask, even a busy controller, and remember you can assert your emergency authority anytime safety comes into question.

Know Before You Go

A safe flight, when there is a chance of thunderstorms, begins with a good preflight briefing. This should be done as close to departure time as practicable. Thunderstorms are explosive when they build rapidly—growing at rates up to 6,000 feet per minute! Remember, too, that flying on any day when the atmosphere is ripe for thunderstorms can result in quite an uncomfortable ride, even as thunderstorms are building or when entering areas of weak precipitation [see box on right].

Automated Flight Service Station (AFSS) briefings prioritize weather hazard areas—pointing out where you shouldn't go. The pilot needs to know where he or she can go. That's a tougher question, but here's how to get the best information.

Once airborne, initiate calls to Flight Watch early. One AFSS specialist I spoke with said "There's nothing worse than a call from a pilot who's already in trouble. Air Traffic may not be able to help much either."

On convective weather days, as soon as you're established in cruise is probably a good time to get the first in-flight weather update. You may think, "That's too soon to start worrying about it. Didn't we just take off?" Do the math. Even a short and prompt trip to the airplane after completing a weather briefing—with preflight, run-up and departure routings to get established on course and at cruise altitude—can take around an hour or longer. Time went by quickly for you because you were busy. The towering cumulus and thunderstorms have been busy too!

In a previous weather article, the number of pilots involved in fatal weather accidents who called for in-flight weather was termed "dismal." There were 19 radio contacts for weather out of 586 accidents. Not all of these were for convective weather, but you get the idea.

To get the best information from Flight Watch, give them what they need from you up front: Your call sign, type aircraft (this gives them idea of your speed—a key ingredient for rapidly building or moving thunderstorms), present position, IFR or VFR, destination and your route.

Some AFSS's have a new tool, at both the Flight Watch and in-flight or "Radio" positions. It's called OASIS and with it they can overlay your present position and proposed route of flight on the weather radar picture. Much more importantly, they can suggest an alternate route using airways and VOR's that are clear of storms.

The AFSS specialist is probably familiar with the areas of storms. In fact, if you simply monitor the Flight Watch frequency (122.0) while en route, you can learn a lot just by listening. When it's time to call, if you find the Flight Watch frequency crowded, you may want to try a call to the In Flight AFSS specialist or "Radio." These frequencies are usually not as congested, but the specialist you talk to may not be certified and trained to provide en route weather to the same level as the Flight Watch specialist.

For more information on flying safely and thunderstorms, including a convective mini-course, visit the AOPA Air Safety Foundation's web site at <www.asf.org>.

Michael Lenz is a Program Analyst in Flight Standards' General Aviation and Commercial Division.

Controllers' Descriptions of Weather Echo Intensity

Pilots may hear controllers describe levels of precipitation or radar echoes as:

Level 1 - Weak
Level 2 - Moderate
Level 3 - Strong
Level 4 - Very Strong
Level 5 - Intense
Level 6 - Extreme

Air Route Traffic Control Center controllers have the capability to depict and describe precipitation as Moderate (Level 1 and 2), Heavy (level 3 and 4) and Heavy (Same term but with a different depiction on the controller's display) (level 5 and 6).

Avoiding a Most Unpleasant Come Down

by Joe A. Stamm

Modern aircraft engines have proven themselves to be extremely reliable and safe when maintained and operated according to manufacturers' recommendations.

Today's aircraft engines can be relied upon by pilots and passengers to perform flawlessly for thousands of hours of operation between scheduled overhauls or replacements. We confidently entrust our safety to our aircraft's engines when flying over water, mountains, or other hostile terrain, as well as when flying in all kinds of weather conditions. This being the case, why do we still read of flights that result in off-airport landings due to engine stoppages?

A review of National Transportation Safety Board (NTSB) reports and aviation insurance claim records shows that the most common causes of engine stoppage...rare as they maybe...are: 1) poor and irregular engine maintenance, 2) fuel exhaustion...pilots simply running themselves out of fuel, and 3) misfueling...fueling an aircraft with the wrong grade of fuel. All three of these causes are well within the pilot's control to prevent and detect, and they are clearly assigned as the pilot's responsibility by the FAA.

The responsibilities for proper equipment maintenance and fuel management are well-recognized, understood, and accepted by all pilots. The FAA has established minimum regulatory requirements for each of these activities. Aircraft engines and airframes are subject to inspections by licensed A&Ps at regular intervals (e.g. 100-hour and annual), and VFR and IFR fuel reserves are also specified by regulation.

However, less well recognized, regulated, and accepted by pilots is the responsibility to ensure that their aircraft are fueled with the proper grade of fuel. Good common sense tells us that this is a very important safety issue, but how do we ensure that it actually happens? Do we just trust or is there more that can be done?

While some, but not all, jet and turboprop-engined aircraft are certified to operate on avgas in emergency situations or for a limited number of hours, reciprocating engines cannot run on jet fuel. Engine stoppage and/or serious engine damage will occur shortly after start-up. According to NTSB reports, all too often the engine stoppage occurs during the hazardous climb-out phase of flight, sometimes with dire consequences. Furthermore, with the introduction of diesel-powered aircraft, it is of growing importance to recognize that avgas is an unacceptable fuel for diesel engines (and many turboprop aircraft) for the same reasons.

So what is a conscientious, safety-oriented pilot to do? Air BP has developed a safety program to address the industry-wide potential of misfueling of aircraft.

The results of a recent survey sent to thousands of pilots were quite revealing. Among the more interesting survey findings are:

- 67% of the pilots polled always attend their plane's oil changes and

50% are present for airing a tire; however, only 39% of pilots attended the fueling of their aircraft. Can you relate? Why is this? How many of us have rushed through the FBO on our way to an important meeting or even just for the "$100 hamburger" and simply instructed the FBO to, "Please top-off the tanks. I'll be back in an hour or two for an immediate departure?"

• The survey also found that 86% of pilots feel that their pre-flight sumping of fuel tanks is sufficient to protect against a misfueling of their aircraft. Alarmingly, 14% of pilots admitted to not always conducting a pre-flight check. It's important to understand that, particularly in a fuel "topping-off" situation, the in-tank blending of fuel color and odor of two dissimilar fuel grades can mask a potentially dangerous misfueling event. Therefore, a pre-flight check alone is not sufficient protection...more on this point in a moment.

• A surprising percentage of 60% of the pilots surveyed felt that they were not responsible for ensuring that the proper grade of fuel had been pumped into their aircraft. While FBO personnel are certainly experienced, well trained, and recurrency trained regularly, do you really want to put your safety in anyone's hands but your own? A partnership between pilots and FBO personnel, each taking full responsibility, is a much safer and more effective approach.

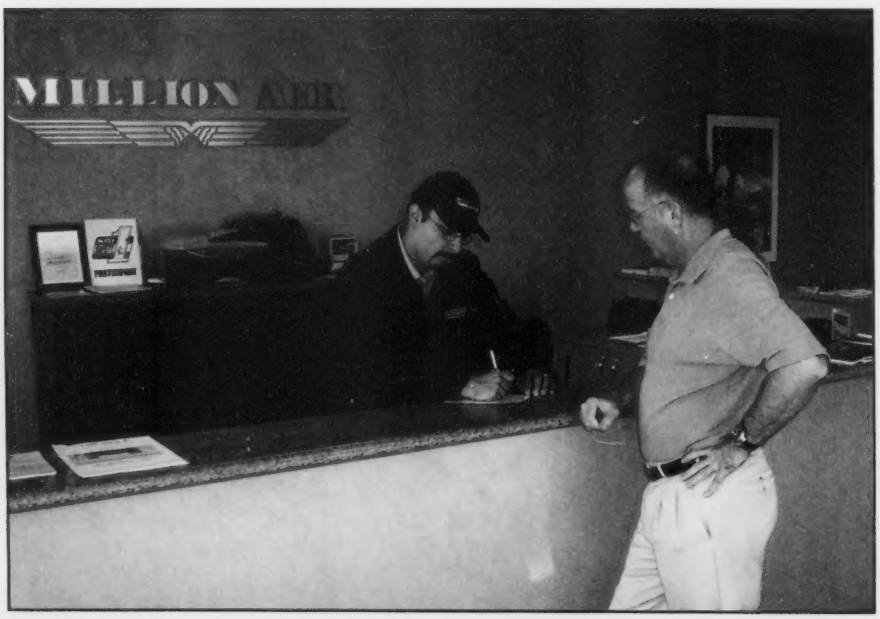
• Only 16% of pilots correctly identified the color "red" as the internationally recognized fuel truck and aircraft wing placard color for avgas; half of the pilots correctly identified "black" as the placard color for jet fuel. The survey showed quite clearly that pilots have been better trained to associate the fuel color of "blue" with avgas and "straw-yellow" with jet fuel color rather than to be able to correctly identify fuel truck and wing placard colors.

As a result of these significant findings from the pilot survey, Air BP has launched a safety awareness campaign aimed at the general aviation market through its Air BP-branded FBOs (and other venues as well, AirVenture 2005 in Oshkosh, for example). The campaign reinforces the importance of ensuring that only the proper grade of aviation fuel is used in every aircraft. The Air BP safety campaign stresses the importance of communication, cooperation, and teamwork between pilots and FBO desk and line-service personnel throughout the refueling process. In addition, Air BP is developing engineered solutions to the potential problem of misfueling, including a selective fuel fill port for turboprop and diesel-powered aircraft and a fuel truck lockout device which will help prevent the incorrect fuel from being loaded on an aircraft.

Air BP is collaborating with a large group of regulators, aviation associations and organizations, aircraft manufacturers, and equipment suppliers on this important safety initiative.

There are four significant interactions or "touch points" that provide opportunities to ensure that your aircraft is fueled with the proper grade of aviation fuel each and every time:

The first opportunity is when the fuel order is placed. Air BP encourages pilots to place their fuel orders by clearly stating verbally, and/or in writing, the grade and quantity of fuel that is desired. The FBO desk and/or line service personnel should acknowledge and confirm the specific order with the pilot in a manner similar to reading back ATC instructions. In many cases the fuel order form will be color-coded (Red = Avgas; Black = Jet). Don't allow your safety discipline and good practices to become lax once you are on the ground.



The next interaction is the actual fueling of the aircraft. Pilots should make it a habit to attend, participate in, and observe each and every refueling of their aircraft. Both the line-service personnel and the pilot should positively match the color of the fuel truck placard (red = avgas; black = jet) with the aircraft wing decal color. If your aircraft's wing decal is missing or faded, ask the line-service personnel for a replacement. Air BP-branded FBO's are supplied with wing decals available at no charge to pilots, and the FBO will be happy to properly position and apply the wing decal for you. For even greater fueling safety, Air BP is developing an engineered solution for their Air BP-branded FBO's fueling equipment that will not permit the fueling pump to activate if the

equipment and the plane's fuel requirements do not correspond.

Paying for the fuel delivered or completing the financial transaction is the third touch point where the correct grade and quantity of fuel can be verified. In addition to the dollar amount, pilots are encouraged to read the invoice or credit receipt to confirm that the proper grade and quantity of fuel has been supplied. Many invoices and credit receipts are now distinctively marked to further the fuel grade delivered.

And finally, a thorough pre-flight inspection should always be conducted by the pilot as a final check before departure. Remove the fuel cap and examine each tank to visually check that the amount is as expected. Often you will also be able to identify the fuel color and characteristic odor of either avgas or jet fuel from this inspection. While you have the fuel cap in hand inspect the gasket on the cap for wear or deterioration. Leaking fuel cap gaskets are one of the leading sources of water contamination of fuel. Then, fasten the fuel cap in its secured and locked position on the fuel tank. Next, sump each fuel tank drain checking for contaminants and for proper fuel color and odor. Lastly, look at the bottom surface of the wing and on the ground beneath the wing for any signs of fuel tank leakage or fuel tank vent obstructions. Remember, as stated earlier, no matter how thorough the pre-flight inspection, a pre-flight check alone is not a foolproof way to detect misfueling. It is most effective when employed in combination with the other recommended steps. Always Make Sure!

A few small, simple steps, that when implemented in a consistent, comprehensive fashion will provide you with great peace of mind about your fuel grade and help you enjoy a safe, comfortable flight to your next intended destination!

***The Flight Standards Service's Aircraft Maintenance Division provided the following information to* FAA Aviation News.**

172D
172E
172F (USAF T-41A)
172G
172H (USAF T-41A
M

"**WARNING**: Use of alcohol-based fuels can cause serious performance degradation and fuel system component damage, and is therefore prohibited on Cessna airplanes."

TYPE CERTIFICATE DATA SHEET NO. 3A12

This data sheet which is part of Type Certificate No. 3A12 prescribes conditions and limitations under which the p which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder	Cessna Aircraft Company P.O. Box 7704 Wichita, Kansas 67277

I. Model 172, 4 PCLM (Normal Category), approved November 4, 1955; 2 PCLM (Utility Category), approved December 14, 1956

Engine	Continental O-300-A or O-300-B
*Fuel	80/87 minimum grade aviation gasoline
*Engine limits	For all operations, 2700 rpm (145 hp)
Propeller and propeller limits	1. Propeller (a) McCauley 1A170 Static rpm at maximum permissible throttle setting: Not over 2360, not under 2230 No additional tolerance permitted Diameter: not over 76 in., not under 74.5 in. (b) Spinner Dwg. 0550162

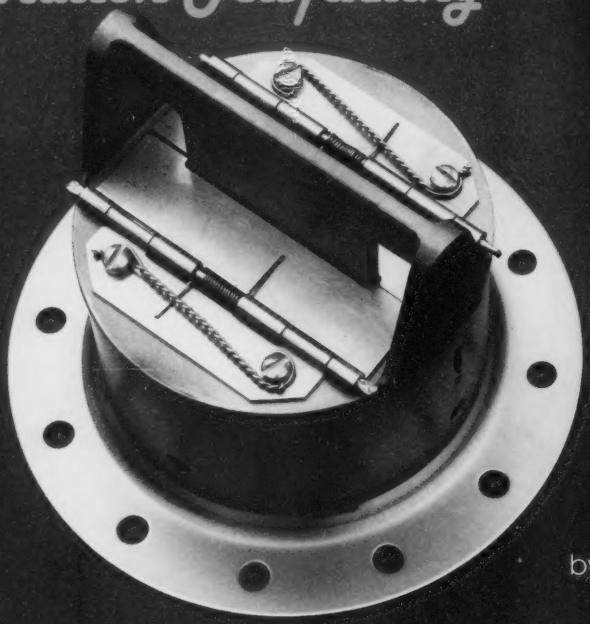
The aircraft type certificate data sheet (TC) lists the minimum grade of fuel for the aircraft/engine combination list on the TC. If the aircraft has an engine installed that is different from the engine listed on the TC, e.g. Supplemental Type Certificate (STC), the STC will list the minimum grade fuel.

The FAA does not regulate the distribution systems for aviation gasoline. The distribution, control, and quality of these fuels are maintained and self-policed by the industry.

Editor's Note: For more information on aircraft fuel and the use of alternate grades, FAA Advisory Circular Number 91-33A, Use of Alternate Grades of Aviation Gasoline for Grade 80/87, and Use of Automotive Gasoline, dated 7/18/84.

Joe Stamm is a safety and aviation industry consultant. A private pilot for over 20 years, Joe also enjoys flying his 1943 N2S-4 Stearman whenever the opportunity arises.

The Causes and Remedies of Aviation Misfueling



by Cesar Gonzales

Over the years, aircraft engines have placed increasing demands on the properties of aviation fuels. By 1948 five grades of aviation gasoline were in use in military, commercial, and general aviation airplanes. The military began transitioning from spark-ignition piston engines into turbines in the early 1950's with the commercial carriers following in the early 1960s using a new type of aviation turbine or jet fuel. Turbine engines filtered down to general aviation fixed-wing applications in 1959 as pure jets and turbo propellers in 1963.

The power output of a spark-ignition piston engine of a given displacement requires a minimum Octane grade to prevent destructive detonation or knock. The higher the specific output of the engine, the higher the Octane grade requirements. On the other hand, turbine engines operating on a continuous combustion process are insensitive to the detonation or knock properties of the fuels. For practical and economic reasons turbine engines burn a different type of turbine or jet fuel that, unlike gasoline, is devoid of detonation or knock suppression requirements. It is for this reason that misfueling spark-ignition piston airplanes with turbine fuels could rapidly lead to severe power losses and ultimately to the destruction of the piston engine, depending upon the engine type and concentration of turbine fuel in the mixtures with gasoline.

While misfueling of aircraft have in very isolated cases originated with contamination or cross-fueling within the production and distribution system that extends from the refinery to the airport dispensing truck or ground tanks, practically all misfueling events have taken place during the last transfer of ownership as the fuel is introduced to the receiver aircraft. It is for this reason that the most effective misfueling prevention measures developed to date are those that affect the mechanical compatibility between the ground refueling nozzle spouts and the aircraft refueling ports.

What follows outlines the evolution of aviation engines and fuel factors that influenced the character and frequency of aircraft misfueling events. It also reviews the misfueling prevention measures adopted to deal with those events in the past, and misfueling prevention devices recently developed to deal with new refueling demands.

In The Beginning

The Wright Brothers 12 HP engine fitted to the first successful heavier-than-air aircraft adopted straight run naphtha used on ground and marine engines and also in heating and illuminating appliances. With only one airplane and one fuel, there were no misfueling concerns in 1903.

Period Between World Wars

Between WW I and WW II the growing military and civilian aviation

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fleets shared common fuels and the exclusive use of spark-ignition piston engines, thus limiting misfueling events to the use of improper grades of gasoline. While some diesel piston airplanes flourished and then vanished, their impact is considered inconsequential. Misfueling prevention measures, particularly in civil aviation applications, were limited to non-standardized decals or placards located near the airplane refueling ports, posting minimum MON or Octane grade requirements and tank capacities in some instances.

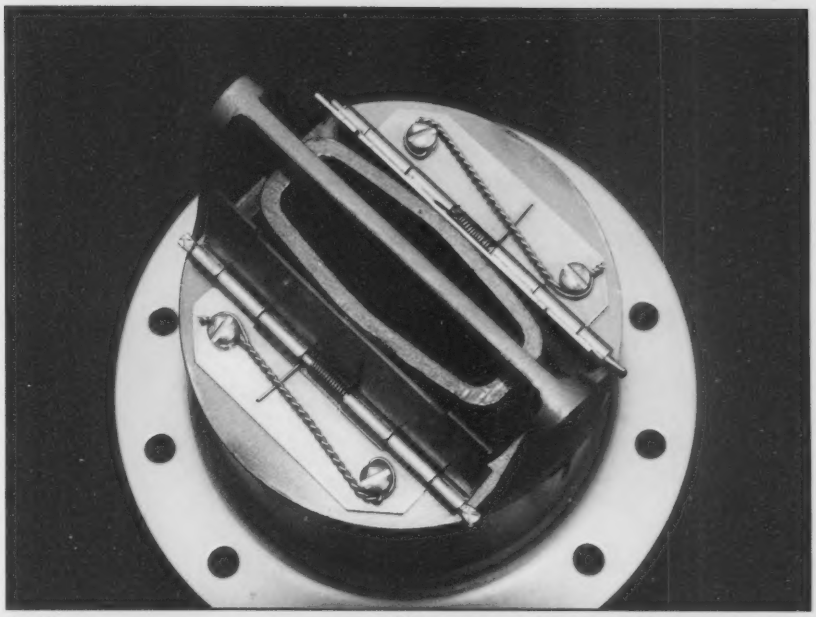
The Post World War II Years

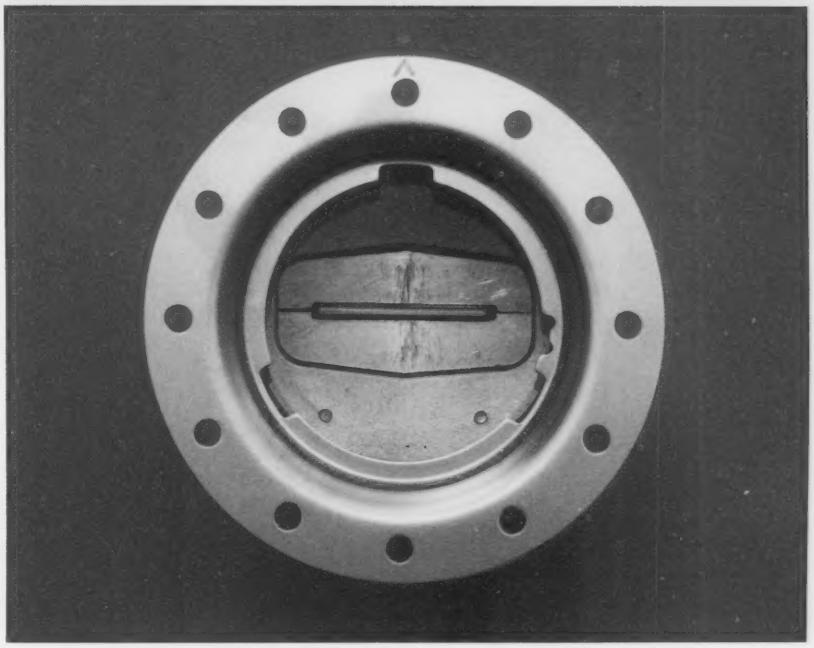
A significant expansion of the commercial and general aviation fleets benefited from the availability of five grades of aviation gasoline to satisfy any Octane appetite of the piston engines by 1948. Misfueling of general aviation airplanes was rare since by 1960 only two grades remained available to this fleet, and many engines of European origin approved to use motor gasoline exhibited a great tolerance to low detonation performing fuels.

Turbine Airplanes

In the early 1960s new types of aviation fuels were adopted by commercial and general aviation turbine applications augmenting the potential, and indeed, the number of aircraft misfueling incidents and accidents. The consequences of introducing the improper grade or type of fuels to aircraft ranged from nuisance events that required the draining and purging of entire aircraft fuel systems to serious accidents.

The use of decals or color coded placards near the airplane refueling ports and eventually around ground refueling nozzles proved reasonably effective in preventing misfueling with the incorrect grade of gasoline. However, with the proliferation of a new type of aviation fuel for turbine aircraft, the need became evident for the development of distinct ground refueling nozzle spouts and corresponding airplane refueling ports to mechanically prevent the introduction of a turbine or jet refueling nozzle spout into airplane gasoline refueling ports.





The first widely publicized misfueling accident in the U.S. was recorded in May 1970 involving a commercial piston aircraft incorrectly serviced with aviation turbine fuel. Incidents and accidents caused by the introduction of the wrong type of fuel on spark-ignition piston airplanes increased in frequency to alarming proportions by the mid-1980s in spite of intensive information campaigns and the widespread installation of color coded fuel identification placards or decals on airplanes and ground refueling equipment.

In December 1984 the SAE Aerospace Standards AS 1852 was released defining selective interface dimensions for airplane refueling ports and ground refueling nozzle spouts.

to an estimated one to two percent of the entire civil fleet of turbine fixed-wing and rotorcraft around the world that cannot be refueled with the standardized elongated turbine refueling nozzle spouts, thus forcing service personnel to replace the turbine refueling spout with the small round aviation gasoline spouts. In some instances, the smaller round gasoline spout remains in the ground turbine refueling equipment, thus contributing to the subsequent turbine fuel misfueling of spark-ignition piston airplanes.

New Misfueling Potentials

The following year, U.S. manufacturers voluntarily adopted the standardized provisions on gasoline piston and turbine airplanes with Germany and France following suit. The effectiveness of these SAE standardized protection devices was proven by 1998 with only one misfueling incident was reported in over ten years involving aircraft and ground refueling equipment in compliance with the SAE AS 1852 standard. Incidentally, it was reported that the individual involved in this incident resorted to extreme measures to defeat the misfueling prevention devices.

Most general aviation turbine engines and airplanes are approved to use aviation gasoline on an emergency basis, but engine operating time limitations with leaded fuels requires appropriate airplane log book entries when such misfuelings are experienced. Misfuelings of turbine airplanes with gasoline continue to this day since the large diameter SAE AS 1852 standardized airplane refueling port accepts all sizes of standardized gasoline ground refueling nozzle spouts. While not critical to flight safety, many operators perceive such airplane log book entries as compromising to the service records of their aircraft, and in many instances they demand a complete draining of the tanks and fuel system and a subsequent purging with turbine fuel. The drained lead contaminated fuel mixtures are subject to expensive and difficult disposal requirements and these nuisance events are troublesome to all of those involved.

Following the Supplemental Type Certificate (STC) approvals to use motor gasoline in a large number of U.S. aircraft in 1982, several motor gasoline misfuelings were reported on light fixed-wing and rotorcraft not covered by the approvals. The problem was attributed in part to the confusion of Aviation Grades for Avgas with Motor Gasoline Pump Grades (R+M)/2. An intensive information campaign promptly resolved this issue and such misfuelings are rare today.

Misfueling of spark-ignition, piston-engined airplanes with turbine fuels persists today in spite of an almost total compliance of these aircraft with SAE AS 1852 standardized airplane refueling ports of reduced diameter. The problem is attributed in part

Recent introduction of general aviation compression-ignition diesel piston engines and turbine aircraft that require the exclusive use of turbine fuels raise new potentials for misfueling. Aircraft diesel piston engines are designed to operate strictly with turbine fuels and are incompatible with aviation gasoline that can be easily introduced through current SAE AS 1852 standardized large diameter refueling ports fitted to these new airplanes.

The new misfueling potentials prompted the development of a new airplane turbine refueling port incorporating an elongated opening, a fence plate located in the center of the opening and normally closed doors. (See photos on page 19 and above) The new features require the exclusive use of an SAE AS 1852 standardized turbine fuel nozzle spout to push the doors open and clear a flow path into the tank while blocking the introduction of SAE AS 1852 standardized round gasoline nozzles. SAE Aerospace Standard AS 1852 is being revised to increase the number of airplane refueling ports from two to three with the new turbine fuel port while the

intent of the SAE document is expanded from the prevention of misfueling spark-ignition piston airplanes with turbine fuel to the protection of all engines and airplanes that require the exclusive use of a single aviation fuel.

A review of color coded decals or placards installed near the airplane refueling ports and ground refueling nozzles will be carried out to establish what revisions, if any, are required as a result of the new airplane turbine refueling port. Consideration will be given to the incorporation of new standardized decals or placards in a future revision of the SAE AS 1852 Aerospace Standard.

As previously noted, the perceived stigma of misfueling entries on aircraft log books and other liability issues are keeping the reporting of misfueling events to a minimum. The temporary installation of small round gasoline spouts on ground refueling nozzles to service non-standardized aircraft turbine refueling ports is proving to be a major factor in the misfueling of spark-ignition piston airplanes with turbine fuels when such gasoline nozzle spouts remain on the ground equipment. The new airplane turbine refueling port protects the airplanes equipped with the new devise since such airplanes can only be serviced with the correct SAE AS 1852 turbine fuel nozzle spout.

The illustration (riight) depicts standardized ground refueling nozzle spouts and airplane refueling ports with their reciprocal interfacing compatibilities indicated by yellow colored arrows.

The application of new airplane turbine refueling ports offers the following favorable conditions:

- Adoption of new turbine airplane refueling ports does not require the modification of current SAE AS 1852 Standard gasoline or turbine ground refueling provisions.
- Adoption of new turbine airplane refueling ports does not require the modification of current SAE AE 1852 Standard airplane gasoline refueling ports, and when the emergency use of gasoline is allowed, no modification of current SAE AS 1852 turbine airplane refueling ports is required.
- The new turbine airplane refueling ports are primarily intended for the new diesel piston airplanes and turbine aircraft that require the exclusive use of turbine fuels.
- The new turbine airplane refueling ports may be adopted on an optional basis on all turbine airplanes to avoid the persistent and frequent unintended gasoline misfuelings.
- With the proliferation of new airplane turbine refueling ports, service personnel will be forced to remove gasoline nozzle spouts temporarily required to service a small number of turbine airplanes not in compliance with SAE AS 1852. This will remove one of the primary causes of misfueling spark-ignition piston airplanes with turbine fuels.
- The new airplane turbine refueling ports do not interfere and are complementary to other misfueling prevention measures.

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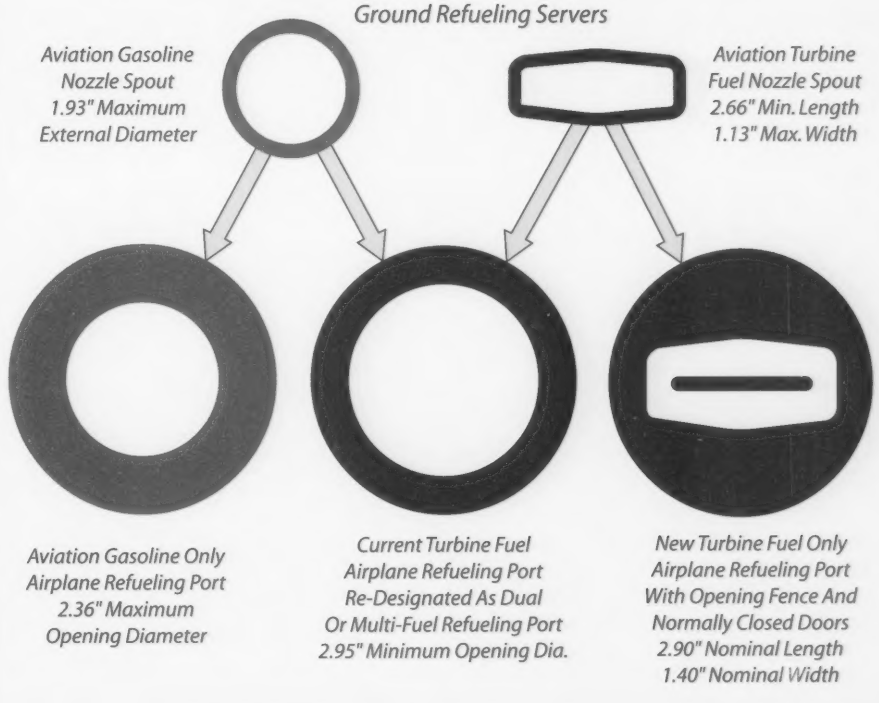
Cesar Gonzalez is a Consultant to Air BP. Cesar has been involved in military and general aviation service, design, piloting, and research activities for 58 years, first in Argentina and then in the U.S. Following his retirement in 1998, he continues as an independent consultant in the design of powerplants, powerplant installations, fuels, and fuel systems.

Ground Refueling Nozzle Spouts And Airplane Ports


Ground Refueling Servers
Aviation Gasoline Nozzle Spout 1.93" Maximum External Diameter
Aviation Turbine Fuel Nozzle Spout 2.66" Min. Length 1.13" Max. Width
Aviation Gasoline Only Airplane Refueling Port 2.36" Maximum Opening Diameter
Current Turbine Fuel Airplane Refueling Port Re-Designated As Dual Or Multi-Fuel Refueling Port 2.95" Minimum Opening Dia.
New Turbine Fuel Only Airplane Refueling Port With Opening Fence And Normally Closed Doors 2.90" Nominal Length 1.40" Nominal Width

FITS

What Users Think

by Tom Glista

The articles I have been writing about FAA/Industry Training Standards (FITS) contained information, FITS philosophy, background, studies, partners, subgroups, etc. But we now have some results of FITS training. So instead of quoting bland statistics, I am writing about what the people who are using FITS think about it. Middle Tennessee State University (MTSU) received FITS acceptance for their FITS Scenario Based Private/Instrument Pilot Certification Course-ASEL on May 25, 2004. The first cadre of students has completed this course. I went out and talked directly to an aerospace department chair, a designated pilot examiner, a flight Instructor, and a student involved in the FITS program.

Keep in mind as you read this that these are opinions and preliminary information. Since MTSU jumped into this program doing FITS training in a full-glass cockpit airplane, we do not know if these results are because of the airplane's instrumentation, the training, or a combination of both. To make scientific determinations, comparative data is required. We would need to conduct controlled studies of FITS training in traditional cockpit Diamond *Star DA-40*s, traditional training in glass cockpit DA-40s, and traditional training in traditional cockpit DA-40s. Finally, all the students in these studies would need to meet the same experience requirements as the original study.

The MTSU Aerospace Department has 825 students of which 400 are flight students. Its fleet consists of nine Diamond *Eclipse* (DA20s), 11 Diamond *Star DA40*s (five of which have Garmin G1000 glass systems installed), three Piper *Arrows*, two Piper *Seminoles*, three Cessna 152 (used by the Flying Raiders flight team), a J-3 *Cub*, and a T-41. MTSU, with the help of a cooperative agreement with NASA, is conducting research on initial training in glass cockpit aircraft using a FITS-accepted private/instrument combined curriculum. They have had their first set of students go through this course in a glass cockpit (G1000) Diamond DA40. Because this is a research project they only chose students who had less than five hours of flight training.

Dr. Paul A. Craig

Dr. Paul A. Craig is the Aerospace Department Chair /Associate Professor for Middle Tennessee State University (MTSU). He holds an ATP certificate, flight instructor certificate (single engine, multi engine, instrument, and seaplane), and an Advanced and Instrument Ground Instructor Certificate. He has logged over 5,000 hours. MTSU has a total undergraduate student population of 23,000, which is greater than the University of Tennessee at Knoxville.

FITS Program Manager (FPM): Dr. Craig, why did you go to a FITS program?

Dr. Craig: We have been sold on scenario-based training for years. MTSU had completed a research project using 'real world' training strategies in the 1990s. The book *Pilot in Command* by McGraw-Hill was based on that project's research, so we were on board the first time we learned of FITS.

FPM: How difficult was it to develop a FITS accepted curriculum?

Dr. Craig: It was not difficult. We used the generic private/instrument syllabus that the FITS team had produced and then adapted it for our own use. The accepted FITS syllabus was later approved under MTSU's existing Part 141 certificate.

FPM: Your instructors were trained in applying FITS. How did they accept this change?

Dr. Craig: The instructors attended two days of FITS training that was conducted by members of the FITS Technical Team. The instructors were eager to use the new approach. It was not long ago that our instructors were students themselves and they immediately wished that their training had used the "real-world" FITS approach.

FPM: What did you see in the way students picked things up in FITS training verses traditional training?

Dr. Craig: The FITS accepted scenario-based syllabus that we have adopted is very "front-end loaded." By that I mean that students are exposed to more topics and they come at them much faster than topics of traditional training. To give you an idea, the very first flight in our syllabus is a flight to another airport. The sixth flight ends with a GPS approach. Long before our students fly solo for the first time, they are planning cross-country navigation, learning airspace, and making weather decisions. This means that students must really start fast, but past about 20 to 25 flight hours, they start getting the payback. Students past 25 hours have far fewer setbacks (the need to repeat a lesson) in their training at the private and instrument levels than the traditional students have.

FPM: Did you encounter any problems with FITS training and the required traditional practical testing?

Dr. Craig: The FITS students learn with a new approach, but test using the old method, and this has been the biggest disconnect with the program. MTSU was granted an exemption to conduct a single private and instrument practical test, but this still has not erased the difference in philosophy that exists. (FPM's note: Title 14 Code of Federal Regulations section 65(a)(2) requires that a person applying for an instrument rating must already hold at least a current private pilot certificate.) Students in our FITS accepted syllabus do learn and perform maneuvers, but they do this within the context of a scenario. The flight test is not scenario-based (despite attempts to shift it that way). So prior to a student's syllabus completion, the student and instructor must step out of their roles in the "real world" training and are forced to spend several hours with drill and practice to "teach to the test." The goal of FITS is to teach pilots to function within the aviation system safely and efficiently. The current test is a series of procedures and maneuvers, some of which have no real-world application. Consequently the test can be out of step with what we believe is a better approach to teaching future pilots in today's complicated system.

FPM: What advise can you give to others who are considering a FITS program to avoid problems?

Dr. Craig: In flight education it seems that a "new big idea" comes out every other year, and many might think that FITS is just another program that will have its time and then be replaced year after next by something else. But FITS is different. FITS is just a different way of viewing the world and the world of flight training. My advise to others is that you must first understand that FITS is not just another FAA program—it's a whole new ball game.

FPM: Let me ask you about the bottom line. What is the cost-benefit analysis for your students?

Dr. Craig: Our FITS-accepted syllabus does save students money over the course of the private and instru-

ment training. Most students get to that point at the 90 hour point, whereas our traditional students normally reach that level with about 130 hours. The next step with FITS now needs to be commercial/instrument because the savings that students gain with FITS through the instrument rating is quickly given back when they must go back into traditional training for the commercial certificate. The next frontier is not a private/instrument, but a FITS commercial/instrument—that would be the greatest cost-benefit.

FPM: Would you do it again?
Dr. Craig: Absolutely!

Mr. Donald Crowder

Mr. Donald Crowder is the Designated Pilot Examiner who conducted the practical tests. He has been flying for more than 40 years, has logged over 12,000 hours, and has been a Designated Pilot Examiner for 12 years. He gives about 160 practical tests a year. He holds an ATP with type ratings in the Boeing 707 and Boeing 720, CFI single engine, multi-engine, and instrument. Besides being a pilot examiner, Mr. Crowder is a full time professor for MTSU. He teaches the University's instrument course and a simulation class for transition into regional jets.

FPM: How did the students do?
Mr. Crowder: They did very well, far better than expected. I conducted nine practical tests and three failed on the first try. This is my average pass rate.

FPM: What were the reasons for the students that failed?
Mr. Crowder: I believe that two of the three failures were because of fatigue. Although the combined PTS does eliminate the same task that would be required to be done twice in separate practical tests, the oral portion is still about three hours and the flight lasts about two and a half hours. I believe that the third failed because the student did not put in the effort required for this program.

FPM: Did you see a difference, good or bad, between FITS and traditionally trained applicants?
Mr. Crowder: It was remarkable. I was expecting it to be a complete flop. A couple of students had only about 75 hours. Most students had far less than 100 hours. When I saw the [application] form I thought "this kid couldn't possibly be ready." Both students with 75 hours passed. Generally I could not separate the ability of the applicants between being FITS-trained in the glass systems who had between 75-110 hours and those trained in a traditional training program in steam gauge aircraft with the normal average of 130 hours. I believe that one of the reasons for these results is because with the glass instrument it's hard to get lost.

Mr. Greg Slagle

Mr. Greg Slagle was one of the flight instructors who gave the FITS training. He holds a Commercial Pilot Certificate Airplane Single and Multi Engine Land; Gold Seal Flight Instructor Certificate Single Engine, Multi-engine and Instrument; and Advanced and Instrument Ground Instructor Certificate. He has been with MTSU for a year and a half with a total time of 1,200 hours and 1,000 hours of dual given. He is leaving MTSU for a new position at Chautauqua Airlines. His first assignment is the ERJ-145 (an Embraer 50 passenger regional jet).

FPM: At first, what did you think about the FITS training?
Mr. Slagle: Scenario-based training is intriguing to all of us. It enforces what the student thinks about real world instead of doing maneuvers. FITS training helps students relate to the real world better when things go wrong. They have a better ability to diagnose problems.

FPM: What did you need to do differently in FITS training?
Mr. Slagle: There was a lot more pre-flight discussion, especially in the beginning. The training is very front-loaded. In the beginning [students] did not always see the relationships between the learning outcomes and what they were doing in the lesson. This is because they came to the training with almost no background aeronautical knowledge and since it is so front end loaded, they did not have simple to complex training learning build-up. But, towards the end the student was taking responsibility for the training lesson and the learning outcomes.

FPM: Is FITS training difficult to do?
Mr. Slagle: It was not difficult—it was just different. Instead of doing small lessons (one or two learning outcomes) it comes all at once. The fourth lesson was a short cross-country. A 20 mile/12 minute flight for the student with three lessons was difficult because there was so much information for the student to know at that time (fuel, weight & balance, weather, flight planning, wind correction angles, aeronautical charts, etc.). In the beginning of the course there is so much information the student had to absorb, the students were overwhelmed, but that problem quickly tapered off.

FPM: How did the students take to it?
Mr. Slagle: The students had to be very driven. Other students who are not so driven may not be able to handle it.

FPM: What progress do you see in students verses traditional training?
Mr. Slagle: Students progressed faster. I believe that it is due to the recurrency. Students flew six to seven hours a week as opposed to maybe twice a week in traditional training. They also learn a lot more with scenarios. They can relate things better with the private/instrument combined. They see the bigger picture as opposed to saying, "Okay today we are going to do stalls."

FPM: What do you think should

be done different?

Mr. Slagle: There were areas in the syllabus that seemed out of place. Some things could have been a little more logical, and parts were a bit vague. We [instructors] have talked with Dr. Craig about this. It would be helpful if the students came to the flight training with more basic aerodynamic and aviation knowledge. They started flight training without any ground school in basic aviation subjects.

Mr. Kurt Jendrek

Mr. Kurt Jendrek was one of the students. He had 102 hours when he took the practical tests.

FPM: What do you think of the flight training you received?

Mr. Jendrek: Overall it was easy. In the beginning, it was almost too much to learn. The first two to three weeks took me by surprise. But I knew I was getting into something that I would have to work hard for. I think it was a little too much to expect students to land after the fourth lesson. We were doing so much other stuff—shooting approaches, learning to get into holding, and hood work. After two or three weeks the pace became less overwhelming, or at least I got used to it.

FPM: Have you flown in a traditional cockpit aircraft since you took your practical test and if so, how was the transition?

Mr. Jendick: I have flown 30 or so hours in steam gauge aircraft. In the beginning it was difficult, but I attributed it to an old aircraft with tired gauges. The transition to the new steam gauge aircraft was easy. In some instances it was easier than flying the G1000.

FPM: How was a steam gauge airplane easier?

Mr. Jendrek: The location of the indicators. For example the airspeed gauge is higher [on the steam gauge aircraft] than the G1000, which makes landing a lot easier. But flight planning is easier with the G1000. It is a trade off. Depending on the mission, it drives what aircraft you would rather use. If you want to practice maneuvers and landings use the steam gauge airplane, if you are going cross-country use the G1000 airplane.

FPM: There is a lot of discussion that the younger video game generation will take to a glass cockpit easier than older pilots. Do you believe that video game experience has helped you?

Mr. Jendrek: I really did not play a lot of video games as a child. My mother would make me go outside and play. In my opinion, it is a lot like video games, but there is a lot outside the G1000 you need to include in your assessment of what you are doing, what you need to do next, and what your options are.

FPM: Was there anything you believe you missed being in this program or something you don't feel confident in?

Mr. Jendrek: I am still concerned about shooting approaches in a traditional cockpit. But there is nothing I missed out on by learning on the G1000. It is a very well thought out program. But being able to land after the fourth lesson…the expectations in the beginning might be too high.

Conclusion

These interviews (only anecdotal evidence) show me a few things. First, that it appears a FITS scenario-based training program does work. This specific program is in a college environment with driven students who can take the pressure of a front-loaded training program. The FITS team reviews a curriculum to ensure that it contains the tenets of FITS. If it meets the FITS tenets, it can be accepted. There is no requirement for a FITS-accepted syllabus to be so front-loaded. Next, we are looking at the testing standards. To have a student trained and competent under FITS and then to pass the test that student must go and spend extra hours on maneuvers is not efficient. One of the funded research tasks which the FITS team is conducting is the "development of a methodology to justify the inclusion or removal of maneuvers from flight training curriculums." Finally, changing from traditional maneuvers-based training to FITS (scenario-based training) was not difficult for anyone involved. As with any developing program, there is always better ways we can do things. So the FITS team will be looking at lots of data and making improvements as we learn more. To err is human, to recover is good training.

Tom Glista is the FAA's FITS Program Manager.

Transforming Science into Art

What the PTS can and cannot do for pilot training...

by: Michael W. Brown

An accomplished practitioner, in any discipline, understands the importance of choosing the right tool for the job. However, what elevates practitioner to the stratum of artist is the skill and imagination with which he or she uses these tools. Of course artistry takes many forms, but in most cases, the measure of creative talent is a highly subjective matter. To illustrate this, we need not look beyond our chosen form of artistic expression. Piloting an airplane, and in particular teaching others to do likewise, requires technical skills the equal of any tradesman, combined with the creativity most often associated with painters, writers, or musicians. However, just as art defies objective measurement, so too does the skill needed to be a safe, competent aviator.

As you might imagine, this creates an interesting dilemma for the pilot certification and flight training communities. Balancing the objectivity needed to measure "stick and rudder" skills with the subjectivity required to evaluate pilot performance in other critical areas is no simple matter. For the purposes of pilot certification, the Federal Aviation Administration (FAA) attempts to do this through the conduct of practical tests. During these examinations, Practical Test Standards (PTS) serve as the yardstick for evaluating an applicant's performance. Pilot examiners look to the PTS as established doctrine in placing objective boundaries around a highly subjective task; that is, determining a pilot's level of competence to exercise specific aeronautical privileges. These boundaries serve both examiner and applicant by highlighting the skills needed to pass a practical test. The PTS is also a tool for flight instructors to use in preparing clients for their much anticipated check ride. However, like all tools, the PTS is only as valuable as the skill and manner of its employment.

And herein lies the problem. An unfortunate paradigm shift seems to have taken place within many segments of the flight training community. Instead of being used as an instrument for measuring pilot competence, the PTS has become a guide around which many training curricula are developed and taught. Without question, this has profoundly impacted the quality of flight training, at all levels, throughout the general aviation (GA) community.

At this point, many flight instructors are compelled to ask, "Why *not* use the PTS as a primary instructional resource?" After all, everything an applicant needs to pass their check ride is contained therein. While this is certainly true, instructors must consider that the PTS is an evaluation instrument, not a teaching tool. As a result, this resource is ill-equipped to address every critical element needed to develop safe, competent aviators. Moreover, even as an evaluation device, the PTS is not without its limitations. Understanding what the PTS can and cannot provide is vital to the success of every flight instructor. So with that, a more critical look at the PTS is in order.

The PTS measures outcome, not process

To illustrate this point, a review of the *Instrument Rating PTS* is needed. Although any maneuver would do, we'll focus on one of the more complex. The circling approach is potentially one of the most demanding maneuvers any pilot will face during normal operations. While most are flown under relatively benign circumstances, factors such as weather, precipitous terrain, fatigue, and equipment failures can easily conspire to produce tragic results. Given the number of accidents involving spatial disorientation and controlled flight into terrain, there is clear and compelling justification for testing proficiency in such procedures. However, given the nature of these operations, would it not also be prudent to spend equal time teaching when and how *not* to conduct circling approaches? If ever an aeronautical activity beckoned for intensive contingency planning, it is the circling approach. Yet if the PTS were used as a primary instructional resource, this lesson could easily go untaught. Even as a testing tool, little emphasis is given to this subject. Is it not logical that we would teach and test those elements most closely associated with accidents involving a particular operation?

If you train to meet a standard, and *only* that standard, you had better be sure that standard is comprehensive

The aforementioned example illustrates the importance of aeronautical decisionmaking and risk management skills. Sadly, these system safety disciplines are largely ignored by each of the tasks outlined within a given PTS. In many areas, the PTS borrows heavily from the training maneuvers developed during the early days of powered flight. For this reason, a private pilot trained to standards outlined in the Civil Aeronautics Regulations, circa 1940s, would likely do quite well in most operations required by today's practical test.

Central to this issue is the manner

in which the training and testing communities view pilot proficiency. The PTS (along with the practical test itself) tends to equate maneuvers-based competency with the airmanship needed to be a complete aviator. While the ability to perform within specified tolerances must not be trivialized, most fatal accidents are not the result of deficiencies in these areas. In short, training focused strictly on PTS areas of operation is woefully inadequate in preparing pilots to exercise their responsibilities as pilot-in-command.

There is simply no good tool for measuring judgment

Now before I anger the human factors specialists and/or behavioral psychologists among you, allow me to qualify this statement. Given the time constraints provided under the current practical testing system, there is no easily employed, objectively measured, comprehensive, accurate, and consistent methodology for measuring judgment. Furthermore, because our current practices only allow applicants to be observed in a highly controlled environment, there is very little basis upon which examiners can predict future performance. If they could, perhaps weather-related accidents would cease to be the foremost perennial killer within the general aviation (GA) community. However, examiners can observe if the applicant employs effective decisionmaking tools, methodologies, and processes during the practical test. In turn, a skilled instructor can teach these tools to pilots during the course of their training.

The PTS is relatively slow to evolve

This recent shortcoming, highlighted by the rapid proliferation of technically advanced aircraft, illustrates the need for instructors to teach beyond current standards. The revision cycle for most PTS documents is something on the order of five years. To put that in perspective, five years ago, no piston singles were delivered with "glass-panel" multi-function and primary flight displays. Today, the vast majority of GA aircraft are so equipped. In fact, Cessna reports that none of its model 172s manufactured this year will be outfitted with traditional "steam gauges."

Going forward

So given these issues, what does the FAA mean when it directs instructors to use the PTS when preparing applicants for a practical test? First, the issues raised here are not intended as a condemnation of the PTS or the practical testing system. While there are always opportunities to improve any process, the PTS and practical testing formats have served the flying public extremely well.

Second, like all standards, the PTS must be viewed not as a standalone document, but as an integral part of the overall flight training process. Producing capable pilots involves excellence in training, quality assurance (via a check ride), and an appropriate benchmark to which testing and oversight is conducted. If the system relies too heavily on any single component, a breakdown will most certainly occur.

As previously stated, the key to using any tool effectively lies in understanding its intent and limitations. In the case of the PTS, it should serve as a compendium of competencies, rather than an itemized series of maneuvers or a "how to" guide for passing a practical test. To view it another way, the PTS serves as a framework, a task analysis of those mechanical skills required to pilot an aircraft. However, the true artistry in-flight instruction comes in bridging the gap between what is required to pass a practical test and preparing a student to meet the "real world" challenges of operating in today's national airspace system.

To this end, the tenets of system safety, which include hazard identification and risk management, should be a *de facto* subject taught as part of every flight maneuver. In fact, instructors must use every lesson as an opportunity to examine hazards, analyze risks, and develop coherent mitigation strategies or alternatives. These are the most valuable skill sets an instructor has to impart. If this methodology were employed during a practical test, the examiner would literally need days to evaluate an applicant. Similarly, a PTS that included such items for each operation would indeed prove overwhelming. Yet, as an instructor, integrating these system safety practices into every lesson must become second nature.

To illustrate how simple this approach can be, let us review the *Private Pilot PTS*. For this example, short field landings may be used to illustrate the ease with which system safety principles are integrated into any flight training exercise.

Short field landings are an essential skill for a complete, proficient pilot. However, to primary students, this (or any other) maneuver involves only those elements presented by the instructor. If the only goal stressed is to land on a predetermined point and apply the brakes, the client will take nothing else from the exercise. A student with limited flying experience does not yet fully understand the complexities that go beyond the mechanics of the maneuver. Instructors must draw upon their experiences to supplement the learning process (as well as the requirements of the PTS).

Initially, the student must master the basic mechanics before higher order thinking can be introduced. This means that repetition and practice are used to impart essential stick and rudder skills. The technique described varies little from the methods used to train pilots over the last 90 years, and conforms nicely to the standards outlined in the PTS. Proficiency will be gained in managing speed, pitch, and power while flying a proper traffic pattern. Once mastered, the instructor may then move to the second phase of this training exercise by introducing some key system safety elements.

This will begin with aeronautical decisionmaking. With practice, the student will learn to properly configure the aircraft and establish the neces-

sary descent profile. He or she may also come to rely on landmarks at the local airport to fly an ideal traffic pattern. While these are all important factors, the student has yet to consider any of the elements beyond what is required in the PTS. For example, will the flight be conducted into a busy airport? If so, how will variations in speed and traffic pattern spacing impact the consistency of each short field landing? Under what circumstances would attempting this maneuver be undesirable? To what extent will a contaminated runway surface increase landing distance? If air traffic control requests a higher than normal approach speed, how will this impact the ability to make a short field landing? How will an obstacle on the runway approach end impact or limit the use of a given airport? If an emergency or abnormal condition were to take place, how would this change the criteria for choosing a suitable runway?

As with any complex maneuver, there are a host of additional considerations. Is the runway length suitable for short-field touch and go operations? If so, is the runway length also adequate if the aircraft's flaps/slats fail to extend? The answers to such questions will help provide the all important situational awareness needed to identify hazards and evaluate potential risks. The extent to which available resources, strategies, or techniques can be used to manage risks is the basis for sound aeronautical decision making.

Notice the elements discussed are less technique-oriented, instead focusing on risk management and decisionmaking. In addition, these essentials go beyond what is prescribed in the PTS. Initially, the instructor may take the lead in identifying risks and developing mitigation strategies. However, as the training progresses, the student will ideally assume this role, demonstrating the optimal level of understanding and application emphasized within the PTS.

As an instructor, your task is to develop scenarios, training exercises, and curricula that highlight all known risk factors and other considerations associated with a given PTS maneuver. The goal is to expand the student's zone of competence, and confidence, to meet any foreseeable challenge. When you are able to do this, you have truly moved from practitioner to artist—not simply an instructor, but a teacher of flight. Remember, while anyone can paint a wall, it took Michelangelo to paint the Sistine Chapel. Similarly, anyone can train a student to pass a practical test, but only a true artist gives his or her client the foundation for a lifetime of safe flying.

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Michael W. Brown is the manager of the Certification Branch in Flight Standards' General Aviation and Commercial Division.

WHAT PART 103 IS NOT

by H.Dean Chamberlain

Recently, the FAA's General Aviation and Commercial Division (AFS-800) was asked to review a proposed magazine article about the use of Title 14 Code of Federal Regulations (14 CFR) Part 103, Ultralight Vehicles, for agricultural activities such as crop surveying and spraying. The article is to be used this summer in a farm publication.

The Division's response was that although the article was technically correct, it had a problem. The article said such usage "...may violate FAA regulations, and concerns veteran pilots." The FAA's response was direct and to the point. The Division said there is no "may" involved. Such usage violates FAA regulations.

Based upon the submitted article, *FAA Aviation News* thought this is a good time to review Part 103. With all of the attention the new light sport rulemaking project has received over the last several years, Part 103 seems to have been left in the proverbial dust. But, Part 103 remains an important FAA regulation and provides significant benefits for those who meet its requirements.

In listening to people talk about the 103 rule and in reading about the rule in other publications, everyone seems to focus on the speed, weight, and fuel requirements of the rule rather than on all of the requirements of the rule. For those not familiar with the rule, we need to understand the importance of the rule and what the rule does. By definition, 14 CFR Part 1 says an "aircraft means a device that is used or intended to be used for flight in the air." Then through its various regulations, FAA specifies how aircraft are certified, how they must be maintained, what qualifications and training a pilot must have, and how aircraft are to be operated.

What makes Part 103 unique is what it does for you and your aircraft if you meet its requirements. The rule excludes those aircraft and those who fly those aircraft from the Part 1 definition of an aircraft by redefining those aircraft that meet the Part 103 applicability requirements from being defined as aircraft to being defined as ultralight vehicles. As an ultralight vehicle, these vehicles have their own airworthiness requirements, none; their own maintenance requirements, none; their own pilot training and medical requirements, none; and their own operating rules. Yes, ultralight vehicles have specific operating rules as outlined in Subpart B, Operating Rules, of Part 103.

However, and this is vital to this article, all of the requirements that define an ultralight vehicle must be met for an aircraft to become an ultralight vehicle. If all of the requirements are

... WHAT PART 103 IS NOT

not met, the aircraft remains an aircraft subject to all of the FAA regulations for similar type aircraft.

In the case of the article submitted to AFS-800, the author told how powered parachutes and ultralight vehicles that were being used for sport and recreation purposes were discovered by farmers as being a good tool to use on the farm. According to the draft article, farmers realized the slow speeds offered by the powered parachutes and ultralight vehicles were ideal for monitoring crops, spraying, and other types of agricultural work. The author then discussed the risks of using sprayers and such equipment on powered parachutes and ultralight vehicles that were not designed for such applications. Although such usage may be legal in other countries, it is not legal in the United States.

The issues raised in the article are similar to another ongoing issue in the western United States involving ultralight-type vehicles. That issue is the use of ultralight-type vehicles in predator control.

I use the term "ultralight-type vehicles" because both the agricultural and predator control use of ultralight vehicles are prohibited by the following definition in Part 103.

As stated in section 103.1, Applicability, "This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that:

(a) Is used or intended to be used for manned operation in the air by a single occupant;

(b) Is used or intended to be used for recreation or sport purposes only;

(c) Does not have any U.S. or foreign airworthiness certificate; and

(d) If unpowered, weighs less than 155 pounds; or

(e) If powered:

(1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation;

(2) Has a fuel capacity not exceeding five U.S. gallons;

(3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and

(4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed."

As I said earlier, most people think of ultralight vehicles in terms of weight, speed, and fuel, but few think in terms of types of operations permitted or the single occupant limitation. But if any one of the conditions is not met, then the ultralight-like aircraft is not an ultralight vehicle. Therefore, part 103 does not apply and the aircraft and its pilot must meet all of the appropriate regulatory requirements.

As the rule states in part, for an aircraft to be redefined as a legal ultralight vehicle, it can only be used for recreation or sport purposes. Agricultural or predator control or any type of commercial use does not meet the FAA's definition of recreation or sport. Although some people want to expand the meaning of recreation or sport to mean more than just flying the ultralight vehicle, the reality is the FAA considers the actual flying of the ultralight vehicle to be the recreation or sport activity. Once someone adds another function, such as crop surveying or spraying or hunting or banner towing to the flight, then the intended purpose no longer meets the regulatory definition of Part 103.

To answer the question about the use of two-place ultralight-like aircraft used in ultralight flight training, the FAA years ago recognized the safety value of allowing trained instructors to teach new ultralight operators how to fly the various types of ultralight vehicles. Because the rule does not require any training and the single occupancy requirement made dual training impossible, the FAA through the exemption process permitted three organizations to conduct dual training in ultralight-like aircraft for ultralight vehicle operators. These two-place ultralight-like aircraft were permitted to be used for such training without having to comply with appropriate aircraft regulations. However, the use of such unregistered aircraft was limited to training. Plus, the aircraft had to be operated in accordance with the appropriate organization's exemption. These so-called "fat ultralights" were considered ultralight vehicles for training purposes only. If the aircraft were not used for training ultralight vehicle operators, then the aircraft were supposed to be certificated as aircraft and flown by certificated pilots.

The widespread use of these so-called "fat ultralights" for non-training purposes was a contributing factor in the development of the new light sport regulations. As spelled out in the light sport regulations, such aircraft and their usage will be subject to the light sport requirements. Once all of the so-called "fat ultralights" are converted to light-sport aircraft flown by appropriately certificated pilots by the compliance dates specified in the light sport rules, only legal, Part 103 ultralight vehicles and their operators will remain uncertificated within the FAA regulations.

The Part 103 rule remains intact for the enjoyment of those who meet all of the rule's requirements, including being limited to only a single occupant and only being used for sport and recreation. But for those who follow the rules, Part 103 provides a great way for someone to enjoy flight with minimal Federal involvement.

For all other purposes, a properly registered aircraft flown by an appropriately rated pilot is required.

Tales from an FAA Inspector

by Al Peyus

Airports with Over Water Approaches

Like many of us, I get confused trying to understand some of the FAA regulations. Why are commercial operators (Title 14 Code of Federal Regulations Part 121, and 135) required to protect their passengers by providing floatation devices and Part 91 operators are not?

Throughout our great country, there are airports, both non-towered and towered, that are geographically requiring us to fly a traffic pattern that places us over water and beyond gliding distance from shore as we prepare to land. I have included a sampling of those towered airports in this article.

When flying under Part 121 or 135, you must provide a floatation device for all passengers if your flight path is going to take the aircraft beyond gliding distance from the shore. That means that when on an approach, either under VFR or IFR, at ATC direction or because of the airport's geographical location requires that the flight altitude be below 2,000 feet AGL and one mile or more off shore, the operator must provide floatation devices for everyone on board the aircraft. This excludes the equipment that is required for flights that are "extended over water."

Many of us do not even realize the potential problem because landing at these airports is an everyday affair. We have become jaded to the hazards that are laying in wait for us. Like most hazards that are present in our everyday life, we become so use to the hazard, and, baring any incident or accident, we become inured to it. That desensitization occurs any time we repeatedly face a hazard and walk away safe and sound. That does little to minimize the actual hazard that is still there waiting for us. So, what can we do to keep from falling into that complacency trap?

This can be handled through the same training, both mental and physical, that we do to keep our skills keen and in the forefront of our brain doing VFR, instrument, multi-engine, and instructor training maneuvers. We have to think, read, and practice what we will do for every action and reaction in our training to make this actions almost instinctive. Training to minimize this complacency can be accomplished simply by knowing the glide distance and then practicing in flight to prove the numbers are correct and the aircraft will, in fact, do what the book says.

Do you know how well your airplane glides? What is the best glide speed for the given conditions? Is it based on temperature, wind, humidity, or weight? Does it change with conditions? What are the best conditions? More on this in just a bit.

Let's first talk about the flotation device. Is it needed? If it is required for commercial operations to provide flotation devices for all persons on board, why would the private operator not provide for his/her passengers' safety? Aren't these passengers just as important? A flotation device is a device that is certificated to keep a person afloat for at least a short time to allow rescue.

A flotation device can be as simple as a removable seat cushion to as fancy as an ocean-certified, full hypothermal, inflatable suit. What is needed is something that keeps a person afloat while waiting for assistance. For Part 91 operations, it must compromise between doing the job and fitting the operator's pocketbook. As with any safety equipment, it has to fit the need and be readily available to everyone on board. With the wide variety of devices on the market, there is little reason not to have some version of the flotation device on board.

Here are some of the airports that we can, and do, get outside the gliding distance of shore just by following ATC directions in a normally accepted traffic pattern. On the East Coast there is Boston Logan (BOS) in Massachusetts, Witham (SUA) and Clearwater/Saint Petersburg International in Florida. On the Southern coast we have Lakefront (NEW) in Louisiana. On the West Coast there is McClellan Palomar (CRQ) and Monterey (MRY) in California. And we cannot forget the Great Lakes area. In Pennsylvania there is Erie International (ERI) and Wittman Regional (OSH) in Wisconsin.

In my personal flying, I have flown into Monterey (MRY), Boston Logan (BOS), Portland, Maine (PWM), and San Francisco (SFO) in VFR conditions following traffic while under control of ATC and well outside the gliding distance of shore at 2,000 feet AGL. This is considered a "normal" pattern for traffic control that pilots in the area know and accept without worry or concern for the hazard that lays in wait.

Do not be lulled into thinking that this problem is only at towered airports. There are numerous non-towered airports across the United States that are just as close, or closer, to

water then those mentioned above. The non-towered airports are more dangerous for numerous reasons one of which is simply because there is no tower to immediately notify emergency services that a pilot has a problem.

I have also flown into Provincetown (PVC), Galveston (GLS), Sky Harbor (DYT), and Halfmoon Bay (HAF). These non-towered airports, by their geographical location, put pilots and aircraft beyond gliding distance of shore while flying a "normal" pattern. And that is without traffic to force us outside of our typical "tight" traffic pattern!

This is a serious flying hazard! So why do we so readily accept this risk? Don't we have training programs that teach us to watch out for flying hazards and then how to void them?

Some of the reasons are hard data supported. Engines have become more reliable. Aircraft are being made with more stable systems. Our own dispositions and attitudes play a major role in this hazard identification. We psyche ourselves by saying, "I am a great pilot and I can handle whatever the aircraft throws at me," or "this engine is so good, it will never quit." We're lulled into a false reality that has taken many to the ego deflating point of facing a hard reality. The numbers of incidents and accidents have dropped in this regime of flight aiding us in becoming inured to this hazard.

As we fly at these airports and in these patterns, the hazard is mentally minimized with each flight. We did not go into the drink. We did not have that engine failure! We did not sweat bullets getting the aircraft safely on the ground! Therefore, there is no danger in flying extended patterns placing us beyond gliding distance of shore! That is, until that day when the engine does fail! What a miserable way to bring us back to reality!

Do you remember that first flight over an expanse of water as a solo student pilot or a new certificated pilot? After a very short time, we were able to count the cylinders as each fired. Each time we safely made it across that water, it "seemed" to become safer. After many water crossing, it became "no big deal" and as safe as flying in a closed pattern.

So how do we break our complacency and get back to thinking of the safety of our passengers and our own well-being? One of the fastest ways to get the big picture of what we are really facing in these heavy traffic pattern vectors and non-towered watery traffic patterns is do the math.

A typical traffic pattern altitude for reciprocating engines is between 800 to 1,000 feet AGL and 1,500 AGL for turbine-powered aircraft. At pattern altitude can you glide to shore when you are ¼ mile, ½ mile or one statue mile from shore? If you do not know the answer off the top of your head, it is time to go to the books.

All the required data is found in the aircraft Pilot Operating Handbook (POH) or Aircraft Flight Manual (AFM). The Limitation, Emergency, Abnormal, and Performance sections will have all the data you will need to get the hard numbers for the glide speed and gliding distance based on traffic pattern altitude. Notice the speed for glide does not change. It is simply a matter of the lift over drag equation providing the best forward distance for the least altitude lost. It is the best lift over drag for the aircraft's wing design. It is not like maneuvering speed that must be adjusted for gross weight.

After you find the hard numbers, it is time to test those numbers in actual flight. Grab a flight instructor and head for your favorite local practice field and test the numbers out. The flight instructor has demonstrated this maneuver many times in his/her career preparing student and commercial applicants for their check ride repeating this identical type of flying. It is an eye opener for all of us!

Set your self up first at ¼ statute mile and normal traffic pattern altitude, then ½ of a mile, and finally one mile. In each case, pull the throttle to idle and pitch to your best glide speed and see where this gets you. The flight instructor is there to help protect you from an errant action and provide the guidance to help make this a safe flight.

I have not mentioned that, although conditions do not affect the glide speed, wind does affect the distance traveled over the ground! A head wind shortens the distance traveled while a tail wind increases the gliding distance. Humidity reduces lift, which also shortens gliding distance.

An important point to remember for any situation; keep your flight to landing as close to "normal" as you can. Keep your "pattern" as close to the normal pattern you always fly. We always want our landing to be into the wind for the best control, in a normal configuration (flaps and gear), and at practiced normal approach speeds. By exercising "normal" procedures, we can minimize "Murphy's Law" from jumping up and biting when least expected or wanted.

Now, back to those flotation devises. Where can you get them? How much do they cost? Do they have a service life? Do they have to be replaced? Is there a trade in value for out-of-service-date equipment?

To find where to get these devices, all you have to do is check the web under aviation equipment or call your friendly aviation store. There is a wide variety of devices out there to fit almost every budget and able to cover every need.

After finding the device that appeals to your needs and pocketbook, check the FAA Technical Service Order (TSO) information on the flotation device. That will tell you the service life and offers inspection requirements. The marketing information on each device will tell you all you ever wanted to know about the device: its size, color, shape, trade in value (if any), servicing requirement (if needed), and cost.

So, the question that started this all. If it is required for commercial operations, why are we operating under part 91 and not providing that all-important flotation device to each of our passengers? Is it just because it is NOT legally required?

Al Peyus is an Aviation Safety Inspector in Flight Standards Service's General Aviation and Commercial Division.

Designated Pilot Examiners Seeking Sport Pilot Examiner Privileges

Over the last couple of months, for obvious reasons, the Light Sport Aviation Branch (AFS-610) has received numerous inquires from Flight Standard District Offices (FSDO) and designated pilot examiners (DPE) seeking information on how to obtain sport pilot examiner privileges. This guidance is located in paragraph 2-2g of the *Sport Pilot Examiner Handbook* (FAA Order 8710.7). The guidance states that the DPE contacts the designating FSDO asking to have sport pilot examiner (SPE) and, if desired, sport pilot flight instructor (SFIE) privileges added to his/her existing Certificate of Authority (FAA Form 8430-9). If the designating FSDO concurs then the following information is sent to AFS-610: DPE's name, address, phone number, DPE certificate number, type of designation, category and class authorized, primary area the DPE will administer practical test(s) and any additional areas the DPE can provide service.

After the designating FSDO determines that it will support the DPE's request and notifies AFS-610, the principle operations inspector (POI) responsible for the DPE should ensure that the DPE is very familiar with the duties and responsibilities of a SPE/SFIE. This training must include verifying the DPE's knowledge of the changes to 14 CFR part 61, especially Subparts J and K. The DPE must obtain a copy of the *Sport Pilot Examiner Handbook* and become familiar with the certification requirements for sport pilot applicants. The POI should ensure that the DPE is knowledgeable on how to properly fill out the Airman Certificate and/or Rating Application – Sport Pilot (FAA Form 8710-11). Finally the DPE must have copies of and knowledge on how to use the current Sport Pilot Practical Test Standards appropriate to the category and class of aircraft they will be authorized to perform SPE/SFIE duties. The designating FSDO reissues the Certificate of Authority with SPE/SFIE authority.

The designating FSDO retains supervisory responsibilities for the DPE. AFS-610 monitors the certification activities electronically and provides feedback to the FSDO when problems or concerns surface. AFS-610 provides technical support to the FSDO in sport pilot certification to include DPE annual evaluations when necessary through the Flight Standards Inspector Resource Program. The DPE submits airman applications through their normal process.

We are hoping that a number of current DPEs will request to add the additional privileges to their examining authority. The SPE/SFIE initial training program is progress, but will not be able to keep up with the sport pilot program needs until we are able to designate a significant amount of SPE/SFIEs. We anticipate having about 90 SPE/SFIEs designated by October of this year. With the help from the DPE community we can well exceed doubling this number that will definitely provide support in certificating new sport pilot applicants.

1-800-255-1111

FAA's Safety Hotline

FAA's Safety Hotline operates Monday through Friday (except holidays) from 8 am to 4 pm ET. It provides a nationwide, toll-free telephone service, intended primarily for those in the aviation community having specific knowledge of alleged violations of the federal aviation regulations. Callers' identities are held in confidence and protected from disclosure under the provisions of the Freedom of Information Act.

Aviation Maintenance Alerts

Kolb; Mark III

The following *Special Aviation Maintenance Alert* was prompted by a recent aircraft accident involving a Kolb, Model *Mark III*, which was investigated by the FAA Louisville Flight Standards District Office (FSDO) and the National Transportation Safety Board (NTSB). The findings of this investigation led to a Safety Recommendation from the Louisville FSDO that proposes a series of actions, including a request to issue an immediate *Aviation Maintenance Alert*.

Due to the findings in a NTSB Preliminary Accident Report concerning a Kolb, Model *Mark III*, the FAA recommends the inspection of all Kolb or other Experimental Amateur Built aircraft without fuel tank drains installed, for contamination and water. Owners are further encouraged to consider installing fuel pickup inlet screens and proper low point fuel sump drains in the fuel tanks, if not installed.

Fuel sumps, drains, filters, and strainers are inexpensive, lightweight, and effective mechanical measures, which aid both man and machine with fuel management concerns. They cannot, however, prevent fuel contamination. All pilots should be mindful of what goes into their tanks, how long it has been there, and under what circumstances.

The following reprint of the related NTSB Preliminary Accident Report was obtained from the NTSB web site, <www.ntsb.gov/ntsb>. (The article is as it appears on the NTSB web site.)

NTSB Identification: NYC05LA017 14 CFR Part 91: General Aviation Accident occurred Sunday, November 14, 2004 in London, KY Aircraft: Labhart Kolb *Twinstar Mk III*, registration: N83NK Injuries: 1 Fatal, 1 Serious.

"This is preliminary information, subject to change, and may contain errors. Any errors in this report will be corrected when the final report has been completed.

On November 14, 2004, about 1240 eastern standard time, an amateur built Kolb Twinstar *Mark III*, N83NK, was substantially damaged during a forced landing at Chestnut Knolls Airport (3KY2), London, Kentucky. The certificated private pilot was fatally injured, and the passenger sustained serious injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight conducted under 14 CFR Part 91. According to a Federal Aviation Administration (FAA) inspector, the pilot owned the airplane and kept it in a hangar at 3KY2. The airplane was equipped with two five-gallon fuel tanks that simultaneously fed into the engine. The airplane was not equipped with a fuel sump. On the day of the accident, the pilot added one gallon of automobile gasoline to the airplane, which brought the total amount of fuel on board to approximately seven gallons. The pilot completed a preflight inspection of the airplane. He then started the engine, taxied to runway 26, and departed uneventfully. The pilot completed a touch and go landing, and a full stop landing on runway 26. The pilot then boarded a passenger, and completed another touch and go landing. While in the traffic pattern for a second landing with the passenger, the engine lost power. The pilot attempted to glide to runway 26, but the airplane impacted upsloping terrain two to three feet prior to the runway threshold. The airplane came to rest upright, in a grassy area to the left of runway centerline. During the impact, the airplane sustained substantial damage to the forward fuselage area. Examination of the airplane revealed no rotational damage to the propeller. The FAA inspector observed fuel present in both fuel tanks, fuel lines, the mechanical fuel pump, the electrical fuel pump, and both carburetors. However, sediment was noted in the fuel line prior to the fuel filter. The inspector also observed sediment in the left and right fuel tanks, and retained a fuel sample from the right tank. In addition, the engine was retained for further examination. The reported weather at an airport

approximately eight miles east of the accident site, at 1253, was: wind from 050 degrees at four knots; visibility 10 miles; sky clear; temperature 55 degrees F; dew point 34 degrees F; altimeter 30.64 inches Hg."

FOR FURTHER INFORMATION ON THIS SUBJECT, YOU MAY CONTACT: Daniel Roller, Aviation Maintenance Alerts Editor, Aviation Data Systems Branch, AFS-620, 6500 S. Mac Arthur Blvd., Oklahoma City, OK 73169; telephone (405) 954-3646; fax (405) 954-4655; e-mail Daniel.Roller@faa.gov.

Beechcraft; F-33A; Landing Gear Extension Failure; ATA 3230

(The following is a composite of three identical aircraft having the same problem...with the same part.) An inbound pilot selected gear down, but nothing happened. The crew manually deployed the gear and landed without incident. An outbound second crew selected gear up and nothing happened—still maintaining three solid green lights. A third, inbound crew selected gear down—they too received no gear response...until later. Halfway through the manual extension checklist, the gear decided to extend on its own initiative, allowing for an uneventful landing. Technicians tracked the problem to the often reported, intermittent Dynamic Breaker Relay: P/N SM50D7. Recommendations are everywhere the same: a better relay is needed. (Reported aircraft—numbers 2 and 3 had part total times of 527 and 100 hours, respectively. Part time for aircraft number 1 records on the next line below. These three aircraft will be entered into the SDR database, currently returning 50 reports on this part number.)

Part Total Time: 120 hours.

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"On October 6, 2004 this aircraft sustained nose damage due to the failure of the nose gear to extend for landing. The propeller linkage runs down the outside of the nose landing gear tunnel, and is attached *(there)* in two places with Adel clamps, stand-offs, and AN-3 bolts. The aft attach hole is directly in line with the nose door actuator arm which is hollow...*(welded steel tubing: P/N 2213022-14)*." "This aircraft had the aft AN-3 bolt installed with the threads and nut protruding into the wheelwell...." The writer describes how the hollow actuator arm impacted the protruding bolt, causing it to loosen with each gear cycle. The moment arrived when sufficient *play* allowed the bolt's end "...to pop over into the end of the hollow actuator's arm tube. This now locked the actuator arm into *(its retracted)* position, and locked the gear doors closed, preventing gear extension. During repairs, the L/H tunnel side was replaced with a factory part (P/N 2213001-3), and the *(above described)* bolt's hole comes pre-drilled in the same location. *(Neither the Cessna)* maintenance manual or the parts catalog have reference to prop cable routing. This problem could easily repeat itself on similar aircraft." Part total time: Unknown

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We want to thank Roger Ray from the McMinnville, OR, Automated Flight Service Station (AFSS) and John Stokes II from the Kankakee, IL, AFSS for notifying us of the mistake.

Both of the Flight Service Station Specialists are correct. The above statement is wrong. The correct statement taken on June 15, 2005, from the FAA's Internet web site dealing with Notices to Airmen (NOTAM) says, "FDC 4/0811 FDC ...SPECIAL NOTICE... This is a restatement of a previously issued advisory notice. In the interest of national security and to the extent practical, pilots are strongly advised to avoid the airspace above, or in proximity to such sites as power plants (nuclear, hydro-electric, or coal), dams, refineries, industrial complexes, military facilities and other similar facilities. Pilots should not circle as to loiter in the vicinity over these types of facilities."

FAA Aviation News *apologizes for this mistake. This error highlights the need for everyone, including the* FAA Aviation News, *to check for the latest NOTAM information before every flight. In today's environment, especially with temporary flight restrictions (TFR) that can be issued at any time, it is vital that everyone involved in the national airspace, keep current regarding NOTAMs and TFRs.*

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

• Relative Humidity

The article "Relative Humidity-The Invisible Peril," in the March/April 2004 issue is the only write-up I've ever seen about the effects of humidity and gives some useful information. However, in order for this to be operationally effective, there is more information that is needed.

I've have been in aviation since 1966, and in all that time I've never seen any aviation weather report give the relative humidity. We are given the temperature and dew point, but we have no way to convert them to relative humidity. Also, aviation weather is given in Celsius, not Fahrenheit.

There are a couple of things that could be done. The *Aeronautical Information Manual (AIM)* could give a correction table or graph in Celsius and a way of finding relative humidity from temperature and dew point. Another, and better, way is to have the weather give either the relative humidity, or even better, the altitude correction. I have heard some automated systems give the density altitude, but I don't know if they took into account the relative humidity.

This article is a good first step, but we need more information.

Chuck Jamieson
Anchorage, AK

We have had several readers comment on the density altitude article. The newer FAA pilot training handbooks have expanded information about humidity. The Pilot's Handbook of Aeronautical Knowledge *for example has a section on humidity. But that handbook says that there are no rules-of-thumb or charts used to compute the effects of humidity on density altitude. Pilots are expected to be aware of humidity and to expect an overall decrease in aircraft performance in high humidity conditions. That information was included in the most recent FAA glider and rotorcraft handbooks.*

• Kudos

Kudos to Susan Parson for an excellent article. I worked Risk Management in the Navy when we first started looking into it. More recently, I lead my Experimental Aircraft Association (EAA) chapter through an in-depth risk management analysis of our Young Eagle Program. Susan's article is very concise, yet comprehensive. It is perfect for short attention span pilots. I particularly like the 3P Methodology.

David S. Petri
Via Internet

Thank you for your comments. We passed them along to her.

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Both of the Flight Service Station Specialists are correct. The above statement is wrong. The correct statement taken on June 15, 2005, from the FAA's Internet web site dealing with Notices to Airmen (NOTAM) says, "FDC 4/0811 FDC ...SPECIAL NOTICE... This is a restatement of a previously issued advisory notice. In the interest of national security and to the extent practical, pilots are strongly advised to avoid the airspace above, or in proximity to such sites as power plants (nuclear, hydro-electric, or coal), dams, refineries, industrial complexes, military facilities and other similar facilities. Pilots should not circle as to loiter in the vicinity over these types of facilities."

FAA Aviation News *apologizes for this mistake. This error highlights the need for everyone, including the* FAA Aviation News, *to check for the latest NOTAM information before every flight. In today's environment, especially with temporary flight restrictions (TFR) that can be issued at any time, it is vital that everyone involved in the national airspace, keep current regarding NOTAMs and TFRs.*

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

• Relative Humidity

The article "Relative Humidity-The Invisible Peril," in the March/April 2004 issue is the only write-up I've ever seen about the effects of humidity and gives some useful information. However, in order for this to be operationally effective, there is more information that is needed.

I've have been in aviation since 1966, and in all that time I've never seen any aviation weather report give the relative humidity. We are given the temperature and dew point, but we have no way to convert them to relative humidity. Also, aviation weather is given in Celsius, not Fahrenheit.

There are a couple of things that could be done. The *Aeronautical Information Manual (AIM)* could give a correction table or graph in Celsius and a way of finding relative humidity from temperature and dew point. Another, and better, way is to have the weather give either the relative humidity, or even better, the altitude correction. I have heard some automated systems give the density altitude, but I don't know if they took into account the relative humidity.

This article is a good first step, but we need more information.

Chuck Jamieson
Anchorage, AK

We have had several readers comment on the density altitude article. The newer FAA pilot training handbooks have expanded information about humidity. The Pilot's Handbook of Aeronautical Knowledge *for example has a section on humidity. But that handbook says that there are no rules-of-thumb or charts used to compute the effects of humidity on density altitude. Pilots are expected to be aware of humidity and to expect an overall decrease in aircraft performance in high humidity conditions. That information was included in the most recent FAA glider and rotorcraft handbooks.*

• Kudos

Kudos to Susan Parson for an excellent article. I worked Risk Management in the Navy when we first started looking into it. More recently, I lead my Experimental Aircraft Association (EAA) chapter through an in-depth risk management analysis of our Young Eagle Program. Susan's article is very concise, yet comprehensive. It is perfect for short attention span pilots. I particularly like the 3P Methodology.

David S. Petri
Via Internet

Thank you for your comments. We passed them along to her.

FAA 8710-1 FORM

In a memorandum dated June 15, 2005, from the Manager, General Aviation and Commercial Division, AFS-800, to all Regional and Flight Standard District Office Managers, the Flight Standards Service has revised its policy in FAA Order 8710.3D, *Designated Pilot and Flight Engineer Examiners' Handbook,* concerning the logging of pilot flight time on the Airman Certification and/or Rating Application, FAA Form 8710-1. Changed was how applicants are to report pilot time in area "III Record of Pilot Time."

The memorandum states in part; in area "III Record of Pilot Time" on the Airman Certificate and/or Rating Application, FAA Form 8710-1, the applicant must list at least the aeronautical experience required for the airman certificate and rating sought. Graduates of Part 141 Pilot Schools or Part 142 Training Centers must provide their aeronautical experience in area "III Record of Pilot Time" on the FAA Form 8710-1 application even though the graduation certificate is evidence of having completed the course of training.

If aeronautical experience has no bearing on the airman certification action being sought, it is not necessary for an applicant to complete area "III Record of Pilot Time" on the FAA Form 8710-1 application. For example, flight instructor renewal applications, flight instructor reinstatement applications, ground instructor qualification applications, and pilot type rating applications would be examples where aeronautical experience would not have a bearing on the airman certification action and thus the applicant would not be required to complete area "III Record of Pilot Time" on the FAA Form 8710-1 application. However, all applicants are encouraged to complete area "III Record of Pilot Time" on the FAA Form 8710-1 application. The FAA Form 8710-1 application remains on file with the FAA and can be used to substantiate past aeronautical experience in the case of a lost logbook.

2005 NATIONAL GENERAL AVIATION AWARD WINNERS

For the past 42 years, the General Aviation Awards Program and the Federal Aviation Administration (FAA) have recognized a small group of aviation professionals. It started with the aviation maintenance field and eventually included professionals from flight instruction, avionics, and safety fields for their contributions to aviation safety and education.

This awards program is a cooperative effort between the FAA and a dozen industry sponsors. The selection process begins at local Flight Standards District Offices (FSDO) and then moves on to the nine regional FAA offices. Panels of aviation professionals within the various fields then select national winners from the pool of regional awardees.

Recipients of this year's national awards are John Anthony Teipen of University City, Missouri, Certificated Flight Instructor (CFI) of the Year; Michael Cheever Church of Costa Mesa, California, Aviation Safety Counselor (ASC) of the Year; Michael O'Brian "Mike" Branham of Bella Vista, Arkansas, Aviation Maintenance Technician (AMT) of the Year; and Charles Allen Hanner of Lincoln, Nebraska, Avionics Technician of the Year.

FAA Administrator Marion Blakey will present the national awards during a "Theater in the Woods" program at EAA AirVenture 2005 in Oshkosh, Wisconsin.

2005 CERTIFICATED FLIGHT INSTRUCTOR OF THE YEAR:

Master CFI John Teipen teaches in the aviation program at St. Louis Community College and is an independent flight instructor in the St. Louis area specializing in tailwheel endorsements and upset/spin training in his recently rebuilt 1969 Bellanca 7ECA *Citabria*. He also serves as an aviation safety counselor as well as a designated pilot examiner in airplanes and gliders.

2005 AVIATION SAFETY COUNSELOR OF THE YEAR

Master CFI Michael Church has been a flight instructor for 35 years and has served as an Aviation Safety Counselor (ASC) for more than 16 of those years. He is the chief flight instructor and president of Sunrise Aviation, a Part 141 flight school and Cessna Pilot Center at Santa Ana's John Wayne-Orange County Airport.

2005 AVIATION MAINTENANCE TECHNICIAN OF THE YEAR

Mike Branham began his aviation maintenance career in 1981 as a crew chief on a U.S. Air Force KC135A Stratotanker. In 1999, he began his career with Wal-Mart Stores as an aircraft technician maintaining their corporate fleet. In January of 2000, he was granted inspection authorization by the FAA and joined Wal-Mart Aviation's quality assurance team. In 2004, he was promoted to Wal-Mart's maintenance manager where he helps maintain a fleet of more than 20 corporate aircraft.

2005 AVIONICS TECHNICIAN OF THE YEAR

Charles Hanner is an avionics line team leader at the headquarters facility of Duncan Aviation at Lincoln Airport in Lincoln, Nebraska. In that capacity, he schedules aircraft maintenance, coordinates work on aircraft, mentors other technicians, works directly with customers and supervises the daily operations of Duncan's avionics line maintenance team. He also finds time to continue his professional education by taking systems training, management, and team-focused courses. In addition to an FAA repairman certificate, he also holds an FCC general radiotelephone license with a ship radar endorsement.

Editor's Runway

from the pen of H. Dean Chamberlain

A Few Thoughts About Knowing Before You Buy

But first, we want to offer a short public service reminder for pilots planning on flying to AirVenture 2005 this summer, and who read FAA Aviation News from back to front. As the aviation world prepares for the annual Experimental Aircraft Association's (EAA) AirVenture Oshkosh 2005® in Oshkosh, Wisconsin, if you are planning on flying to Oshkosh in July, you need to find and review the FAA Notice to Airmen (NOTAM) for the event. As we have said in past years, it is critical for anyone planning on flying to AirVenture to obtain a copy of the FAA NOTAM for the fly-in and review the information that pertains to your respective type of aircraft or landing airport. From airport frequencies to visual checkpoints to designated altitudes, the time to review the material is while you are home. Studying the NOTAM for the first time within 10 miles of Oshkosh inbound for landing is not the recommended place of choice. However, you should remember to take a copy with you just in case you have a question about what air traffic control will expect you to do when you get within range. The dates for this year's event are July 25 through July 31. The NOTAM is available on both the FAA and EAA web sites as well as through your nearest Automated Flight Service Station.

In April I went to the Sun 'n Fun Fly-In in Lakeland Florida. I made it a point to visit some of the workshops and forums that were conducted by the many subject matter experts at the fly-in. One discussion on aircraft wiring caught my attention. In another life, four decades ago, I was trained to be an avionics technician in the military, I have worked with aircraft wiring. Later, while in college, I worked at a small airport where I occasionally helped out in the radio shop. Most recently, my old airplane was rebuilt only a few years ago which included the replacement of all of its wiring. So, I thought I would sit down and listen to what the presenter had to say. What he said, I thought was a good reminder to everyone building an aircraft, thinking of building an aircraft, or restoring an aircraft. He made two important points. Although he was talking about wire, his comments are applicable to all parts and supplies purchased for an aircraft. First, he said when buying surplus wire, you need to know why it is surplus. He said in one case, as he passed around samples of the wire, the military and aircraft manufacturers stopped using a particular wire because of a potential fire safety hazard. If you find that risk acceptable for your home-built, then he said there is a lot of the wire available for a good price. You just need to know what you are buying. His second point was if you buy the wire in question, you need to buy its own special wire-stripping tool. The reason is the wire's insulation has a different thickness than most other wire types. Combined, his points were valid for the special wire as well as other surplus aircraft purchases someone may buy for his or her project. I think this is especially true for those attending AirVenture Oshkosh 2005 and any large fly-ins with surplus sales. If you are planning on attending AirVenture with the idea of buying parts for your aircraft or project, it is important you know what you are buying, what are its unique characteristics and requirements, and whether it meets an applicable FAA or industry standard necessary for your particular aircraft. Also, you should know if the item requires any special tools for installation. Finally, you need to make sure you or your maintenance technician knows how to properly install the item. To make his point, the presenter at Sun 'n Fun said, when working with aircraft wiring, you should throw away your automotive-type wire strippers and only use serviceable aircraft specific wire strippers designed to cut aircraft grade wire without damaging the individual coated wire strands. As he said, you need to know what you are buying. Be aware of non-approved parts if your aircraft requires FAA-approved parts.

As he said, it is your money. I think he is right. It is your money and your safety and that of your friends and loved ones who fly with you. It is important for their safety and yours to only buy parts that meet the quality standards of your aircraft's designer and any applicable FAA airworthiness standards. A bargain that lets you down, pun intended, is no bargain. If you are going to AirVenture with credit card in hand, I hope you shop wisely and find what you are looking for. And if you have a few minutes between purchases, you might want to check out the forum areas for a few helpful hints on everything from buying and using surplus items to the latest information on building your own light sport aircraft. And while you are checking out the forums, you should remember to stop by the FAA Safety Center for answers to your aviation questions or if you just want to check the weather and file a flight plan home. Happy shopping.

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